ibi™ WebFOCUS®

User Guide

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Welcome to ibi WebFOCUS

ibi™ WebFOCUS® is the reporting engine that turns corporate data into meaningful information. It enables any executive, manager, analyst, employee, partner, or customer to execute smarter decision-making. The platform delivers many rich new capabilities and integrates the four critical elements that any enterprise needs: business intelligence, performance management, advanced analytics, and data integrity.

Depending on the role you play in your organization, using WebFOCUS®, you can:

- Connect and edit data
- Author reports and visualizations
- Perform predictive and location analytics
- Build applications
- Run and schedule procedures
- Share your data
- And more

Signing in to ibi WebFOCUS

You can open WebFOCUS from any web browser, using the address created during the installation. The sign-in page and default start page may be different depending on the configuration requirements of your organization.

To learn more about the installation process, see the *ibi™ WebFOCUS® Installation and Configuration* guide.

Open ibi WebFOCUS

Procedure

1. In your browser, go to the following page:

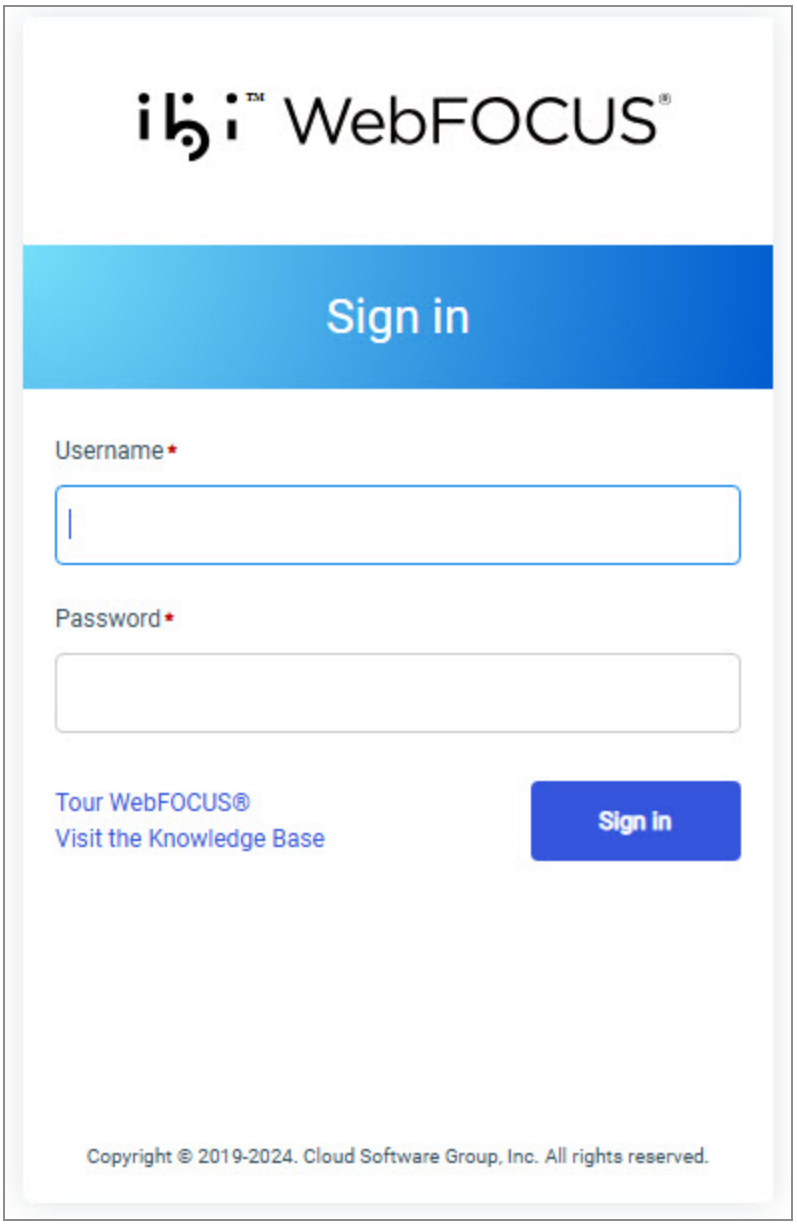
   ```
   http[s]://hostname:port/ibi_apps
   ```

   where:

   hostname:port

   Are the host name and HTTP port of the web server or application server.

   The default WebFOCUS Sign In page opens, as shown in the following image.



2. Type your username and password.
3. Click **Sign in**.

   The ibi™ WebFOCUS® Hub loads and shows all the content that you are authorized to see.

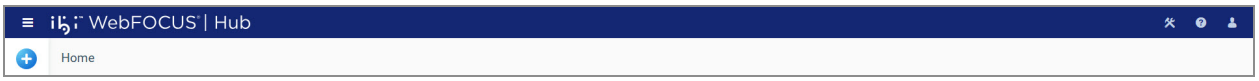
Note: You can also reconfigure WebFOCUS to run the WebFOCUS Home Page, Legacy Home Page, or a custom welcome page after sign-in. This behavior is configured by setting the **Redirect /ibi_apps to** setting on the BI Portal page, in the Administration Console.

Navigating the ibi WebFOCUS Hub

When you first sign in to WebFOCUS, the Hub opens. It serves as a centralized place for working with your data, creating, organizing, searching and sharing content, scheduling reports and procedures, and performing client and server administrative tasks. These functions are controlled by the permissions that are assigned to the role of a user. To learn more about the available roles in WebFOCUS, see the *ibi™ WebFOCUS® Security and Administration* technical content.

Banner

The banner, shown in the following image, is located on the top of your WebFOCUS® Hub. It is accessible from every area of the Hub.



The hamburger button, located in the upper left corner, takes you to the Main Menu. Here you can navigate to the areas of your Hub. This menu also gives you direct access to the ibi WebFOCUS tools, such as ibi™ WebFOCUS® InfoAssist, ibi™ WebFOCUS® Infographics, ReportCaster schedule status, ReportCaster Explorer, and Magnify Search.

The banner is located on the top of your WebFOCUS® Hub. It is accessible from every area of the Hub.

The hamburger button, located in the upper left corner, takes you to the Main Menu. Here you can navigate to the areas of your Hub. This menu also gives you direct access to the ibi WebFOCUS tools, such as ibi™ WebFOCUS® InfoAssist, Infographics, ReportCaster schedule status, ReportCaster Explorer, and Magnify Search.

The plus button opens the New menu, which provides access to the following options and tools.

- **Create Visualizations.** Opens ibi™ WebFOCUS® Designer in Author mode so you can start creating content from data.
- **Assemble Visualizations.** Opens WebFOCUS® Designer in Assemble mode allowing you to assemble visualizations from existing content.
- **Compose Document.** Opens WebFOCUS Designer in Document mode so you can start building a compound document.
- **Get Data.** Opens the Get Data dialog, where you can upload a file or create a data connection to an existing database.
- **Get Data (Advanced).** Opens the Get Data dialog in advanced mode, where you can upload a file or create a data connection and edit the synonyms.
- **Get Data.** Opens the Get Data dialog box, where you can upload a file or create a data connection to an existing database.
- **Get Data (Advanced).** Opens the Get Data dialog box in advanced mode, where you can upload a file or create a data connection and edit the synonyms.
- **Create Data Flow.** Opens the ibi™ WebFOCUS® Reporting Server, where you can create a new data flow.
- **Create DBMS SQL Flow.** Opens the WebFOCUS® Reporting Server, where you can create a new DBMS SQL flow.
- **Create Cluster Business View.** Opens the WebFOCUS Reporting Server, where you can configure a cluster business view.
- **Explore Data.** Opens the Explore Data tool, where you can ask questions and get answers about data.

Next to the plus button, you can see the name of the area that is currently on display.

In the Workspaces area, the banner also displays the View toggle, which allows you to switch between Normal and Admin views of your resources.

- **Normal view.** The view of the repository that allows you to see and manage your own private content. This setting is enabled by default.
- **Admin view.** The view of the repository that allows you to see and manage the private content of other users.

Note: The View toggle is only visible to administrators.

In the Application Directories area, the banner also displays the server selection dropdown list. To learn more about configuring multiple servers for your environment, see the *ibi™ WebFOCUS® Security and Administration* technical content.

Note: The View toggle is only visible to administrators.

In the Application Directories area, the banner also displays the server selection drop-down list. To learn more about configuring multiple servers for your environment, see the *ibi™ WebFOCUS® Security and Administration* technical content.

In the right corner of the banner, you can access the following buttons and menus.

Tools

The Tools button provides access to the following menus.

- **Stop Requests.** Terminates outstanding interactive requests that are running.
- **Manage My Agents.** Navigates to the WebFOCUS Reporting Server in a new browser window, where you can view and manage your agents.
- **View Deferred Report Status.** Opens a Deferred Status report in a new browser window, which allows you to view the status of deferred reports and manage them.
- **View Sessions.** Opens the Session Viewer in a new browser window, which shows the status of the current session.
- **Edit My Profile.** Enables you to change your current server user profile settings.
- **Edit My Profile.** Enables you to make changes to your current server user profile settings.
- **Session Log.** Provides access to the following options:
    - **View Session Log.** Navigates to the Server Session Log in a new browser window where you can view your session log.
    - **Clear Session Log.** Clears the current session log.
- **View Login Info.** Opens the View Login Info in a new browser window, where you can see information about the WebFOCUS instance you are currently running.

Help

The Help button provides access to the following menus.

- **Help.** Provides access to the following options:
  - **Web Client Help.** Opens the WebFOCUS Online Help plug-in in a new browser window.
  - **WebFOCUS Reporting Server Help.** Opens the WebFOCUS Reporting Server Help plug-in in a new browser window.
- **Help.** Provides access to the following options:
  - **Web Client Help.** Opens the WebFOCUS Online Help plugin in a new browser window.
  - **WebFOCUS Reporting Server Help.** Opens the WebFOCUS Reporting Server Help plugin in a new browser window.
- **Community (myibi).** Opens the myibi customer community page in a new browser window.
- **Technical Resources (KB).** Opens the WebFOCUS KnowledgeBase in a new browser window.
- **About WebFOCUS.** Opens the About WebFOCUS dialog, which contains information about the current release of the product, as well as web client and reporting server details. You can select a reporting server from the server selection dropdown list, located inside the WebFOCUS Reporting Server Detail tab of the About WebFOCUS dialog.

  Note: For more information on how to configure multiple Reporting Servers, see the *ibi™ WebFOCUS® Security and Administration* technical content.

- **License.** Directs you to the End User License Agreement document.

User Profile

The User profile button contains the following action menus.

- **Switch Home Page.** Provides access to the following options.

    - **WebFOCUS Home Page.** Opens the WebFOCUS Home Page in a new browser window.
    - **Legacy Home Page.** Opens the Legacy Home Page in a new browser window.

- **Change Language.** Opens the Change Language dialog, where you can change the language of your WebFOCUS environment.
- **Change Password.** Opens the Change Password dialog, where you can reset a password for your account.
- **Reset View.** Resets the WebFOCUS Hub to the default view and displays the Home area with the Recents view in focus.

  > **Note:** By default, the last place you visited on the Hub is remembered by WebFOCUS and opens automatically when you return to your environment. Clicking **Reset View** deletes the memory of your previous Hub location.

- **Change Language.** Opens the Change Language dialog box, where you can change the language of your WebFOCUS environment.
- **Change Password.** Opens the Change Password dialog box, where you can reset a password for your account.
- **Reset View.** Resets the WebFOCUS Hub to the default view and displays the Home area with the Recents view in focus.

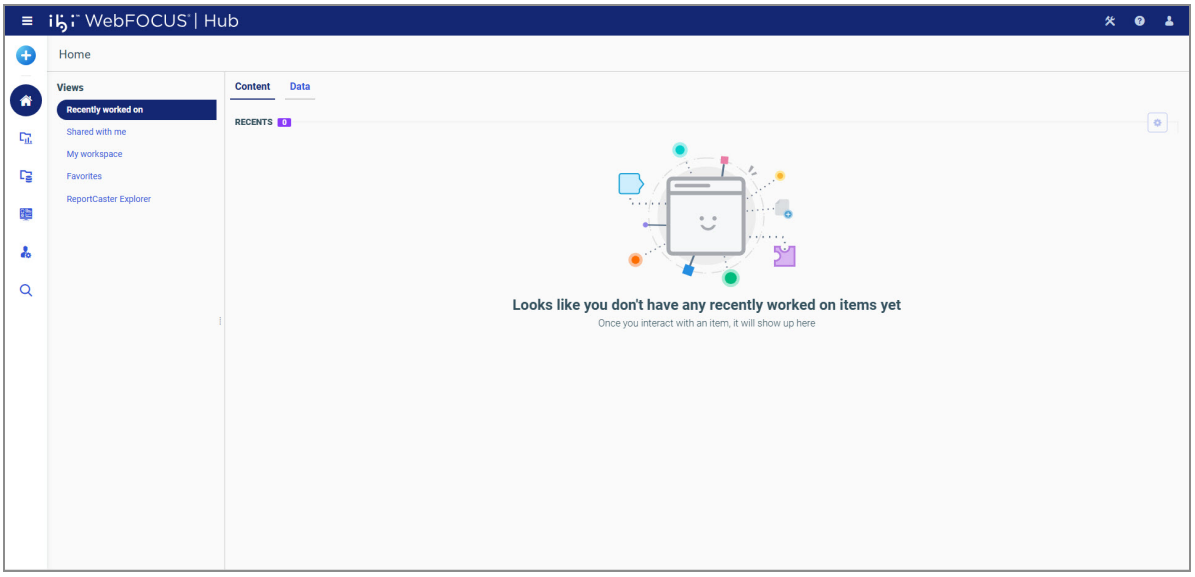
  > **Note:** By default, the last place you visited on the Hub is remembered by WebFOCUS and opens automatically when you return to your environment. Clicking **Reset View** deletes the memory of your previous Hub location.

- **Sign Out.** Signs you out of WebFOCUS.

Home Area

The Home area is what you see when you first login to WebFOCUS. It provides quick access to the items that you worked on, your private and favorite content, the items that were shared with you or your group by other users, as well as helpful resources that you can use

to start your journey with WebFOCUS. An example of the Home area is shown in the following image.



Note:
The default width of the left pane on the Home page is 275 pixels. This is also the minimum width of the left pane. If you expand the left pane, double clicking sets it to the default width.

The Home area is comprised of five views:

- Recently worked on
- Shared with me
- My workspace
- Getting Started
- Favorites

When you create a new item, edit an item, or run an item anywhere in the environment, this item appears in the **Recently worked on** view, which consists of two tabs: Content and Data. Under the Content tab, you can see recent items from the ibi™ WebFOCUS® Client side. The Data tab displays recent items from the WebFOCUS Reporting Server. Both types of items have shortcut menus that vary depending on the nature of the item and your permissions. You can remove an item from this view by right-clicking it and clicking **Remove from Recents**.

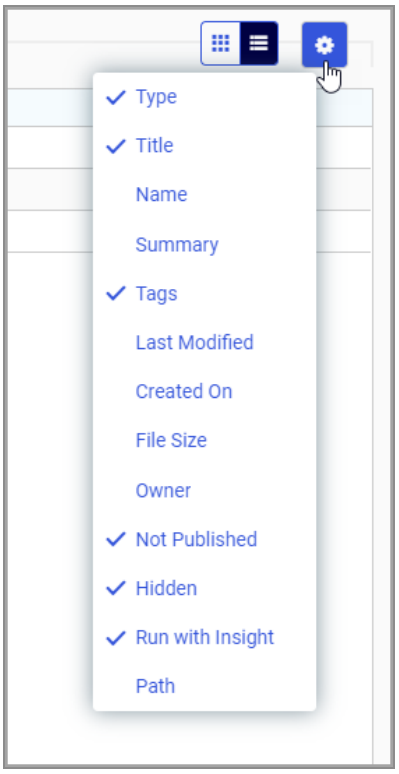
The **Shared with me view** shows all of the content items that were shared with you or your group, by other users, or the items that were shared with all users in your environment. The items display in the order in which they were shared, descending from the newest to the oldest. From the **Shared with Me** view, you can run and edit items, as well as view and edit their properties.

The **My workspace** view is a centralized location for all your private content. Whenever you create an item inside My Workspace in the Resources tree, as well as inside the My Content folder in any other workspace, this item is private. The **My workspace** view automatically displays all private items from everywhere in your repository. The shortcut menu options inside the **My Workspace** view are identical to those inside the My Content folders in your repository.

The **Getting Started** view offers an introduction to WebFOCUS in the form of educational resources and analytical content examples. Once you no longer need this information, you can customize the Getting Started view to display any other workspace in your repository, as described in Customizing the Getting Started View.

Saving content items as favorites anywhere in the repository or server applications, automatically adds them to the **Favorites** view. Similar to the **Recently worked on** view, your **Favorites** are divided into two tabs: Content and Data. Under the Content tab, you can see the items that you saved as favorites from the WebFOCUS® Client side. The Data tab displays the favorite items from the WebFOCUS Reporting Server. To save an item as a Favorite, right-click it and then click **Add to Favorites**. To remove an item from the **Favorites** view, right-click it and then click **Remove from Favorites**.

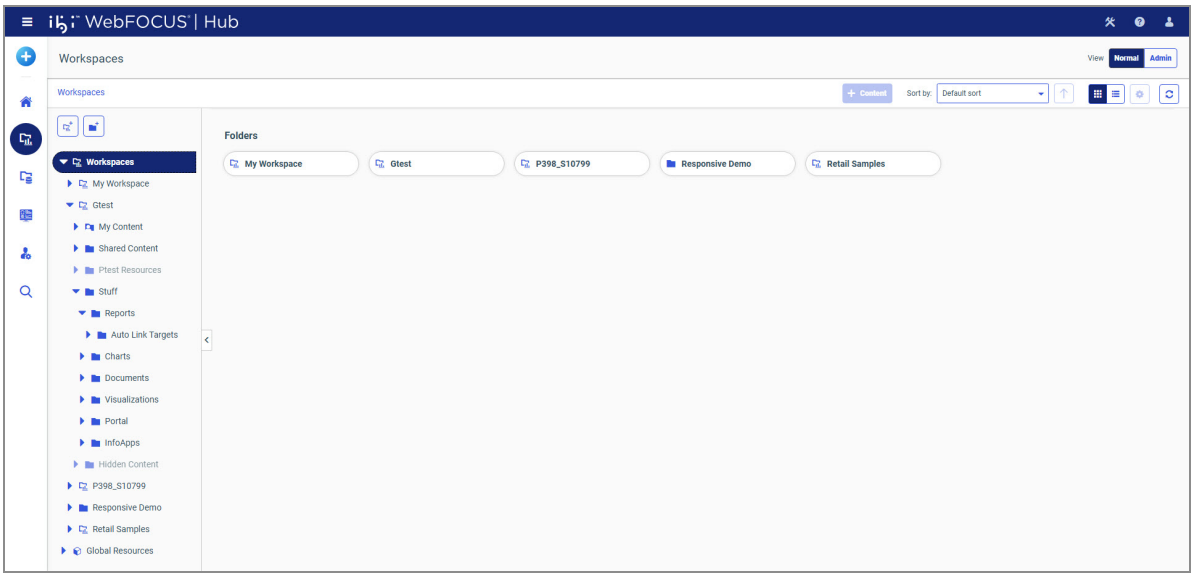
Everywhere in the Home area, you can switch between the tile and list views, by clicking the **List view** and **Tile view** icons in the upper-right corner of the canvas. In the list view, you can sort each column by clicking the column title. You can also specify which columns display in the list by clicking the **Select Display Columns** button and selecting the desired columns from the list. An example of an expanded columns menu is shown in the following image.



You can set up an individual selection of columns for each view of the Home area. For example, you can add the Owner column to the list in the **Shared with me** view to see which user shared an item with you; or you can add the Workspace column to the list in the **My workspace** view to see where each item resides in the repository.

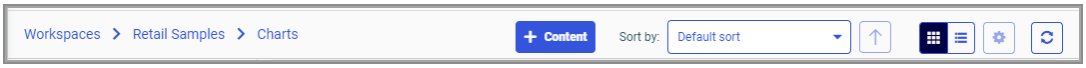
Workspaces Area

The Workspaces area is where most of your content management takes place. Here, you can organize your repository structure, create and interact with content items, create sample content, work with data, and perform other tasks. The Workspaces area is shown in the following image.



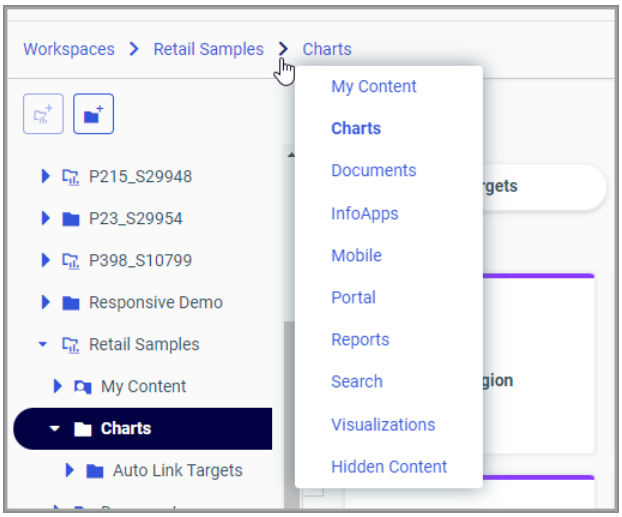
Page Toolbar

The page toolbar is shown in the following image.

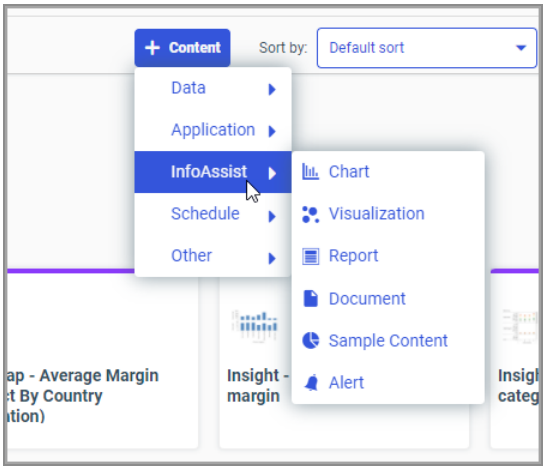


You can use the page toolbar to move between folders in your repository, create and sort content, search the contents of a workspace or folder, change the view of items in the content section, and refresh content in a workspace or folder you select.

When you drill into the folders in your repository, the page toolbar generates a breadcrumb trail that you can use to move between folders. You can move back one folder or multiple folders in a single click. You can click a folder name to view the contents of that folder. You can also click arrows between the folders, to see the file structure that is displaying, as shown in the following image. In this example, the selected folder appears in bold.



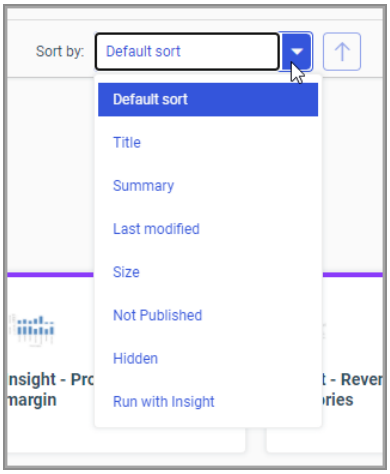
You can use the **+Content** button to create analytical content with WebFOCUS® InfoAssist, upload files and spreadsheets, connect to data, build portals and pages, schedule procedures, and generate sample content using the options available to you for a workspace or folder. The following image shows an example of the **+Content** menu an advanced or basic user has access to for a workspace or folder.



The **+Content** menu only displays the items that you can create for the workspace or folder that is selected. The items displayed in the +Content menu are also subject to permissions. You can only see the items that are available to you based on your role. To learn more about roles, see the *ibi™ WebFOCUS® Security and Administration* technical content.

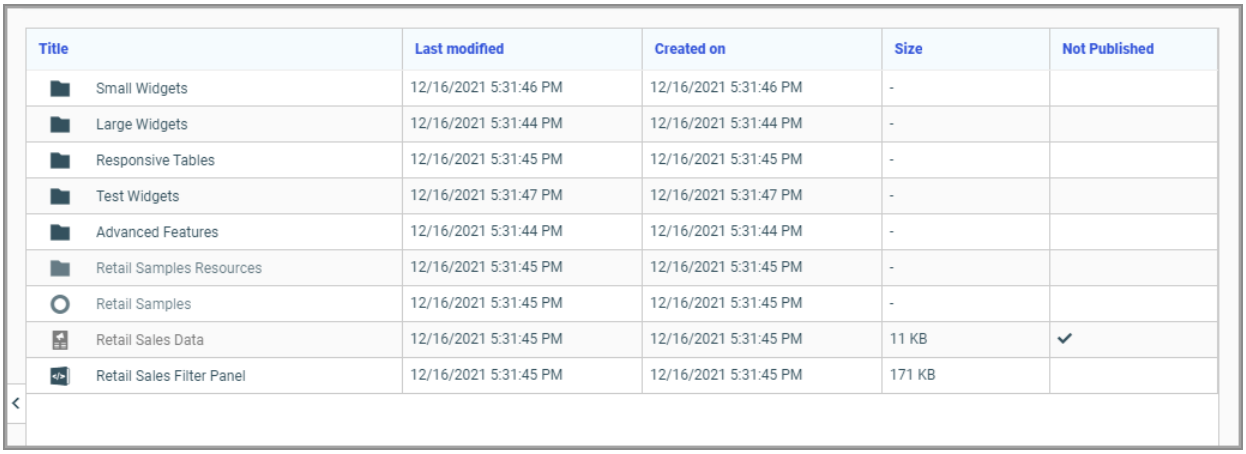
You also can toggle the view of your content between tile view and list view in a workspace or folder. By default, content displays in the tile view. Click the **Tile view** icon or **List view** icon to change your view.

The tile view allows you to see the thumbnails of your items, which you can customize to add transparency to your display. You can sort the items in the tile view by using the **Sort by** dropdown list shown in the following image. Once you select a sort option other than the default one, you can reverse the sort order by clicking the **Reverse sort order** button.



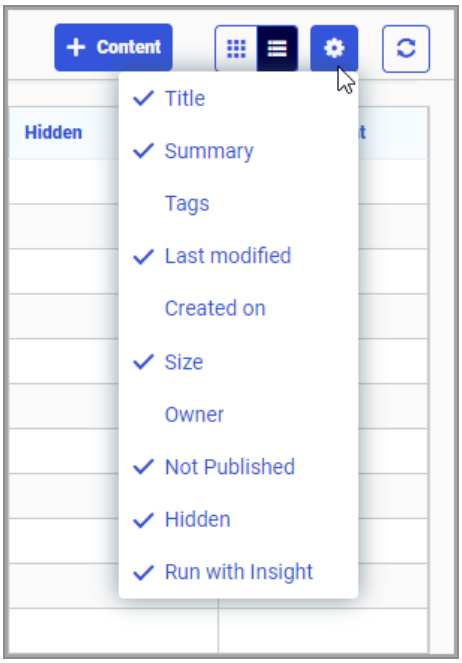
Note: You can also create a customized sorting order, by configuring the Sort Order property for the item.

The list view is useful when you need to see a large number of items at a glance. You can easily identify the item types by their icons, which mirror the icons in the **+Content** menu. An example of a list view is shown in the following image.



Title	Last modified	Created on	Size	Not Published
Small Widgets	12/16/2021 5:31:46 PM	12/16/2021 5:31:46 PM	-	
Large Widgets	12/16/2021 5:31:44 PM	12/16/2021 5:31:44 PM	-	
Responsive Tables	12/16/2021 5:31:45 PM	12/16/2021 5:31:45 PM	-	
Test Widgets	12/16/2021 5:31:47 PM	12/16/2021 5:31:47 PM	-	
Advanced Features	12/16/2021 5:31:44 PM	12/16/2021 5:31:44 PM	-	
Retail Samples Resources	12/16/2021 5:31:45 PM	12/16/2021 5:31:45 PM	-	
Retail Samples	12/16/2021 5:31:45 PM	12/16/2021 5:31:45 PM	-	
Retail Sales Data	12/16/2021 5:31:45 PM	12/16/2021 5:31:45 PM	11 KB	✓
Retail Sales Filter Panel	12/16/2021 5:31:45 PM	12/16/2021 5:31:45 PM	171 KB	

In this view, you can sort your items by clicking any column title. Each column features a three-step toggle sorting: ascending, descending, and return to the default. You can also specify which columns display in the content section by clicking the **Select Display Columns** button, and selecting the columns you want to view from the list. An example of an expanded columns menu is shown in the following image.

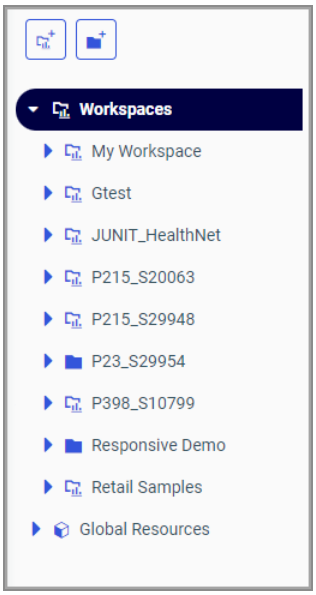


When you hover over an item that contains a summary, this summary displays as a tooltip in both tile and list views.

Finally, to refresh all content in a selected workspace or folder, click the **Refresh** button.

Resources Tree

The Resources tree provides a way to view your repository structure and navigate between workspaces and folders that are available to you. The following image shows an example of a Resources tree.

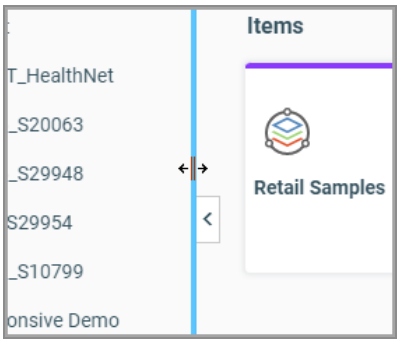


You can use the **New workspace** button and **New folder** button on top of the Resources tree to add new workspaces and folders to your repository. These buttons mirror the icons for workspaces and folders that display inside the tree.

You can expand or collapse workspaces and folders by clicking the arrows next to them. When you click a folder, its contents display in the content section. You can also right-click a folder to access a shortcut menu of available options. From the shortcut menu, you can perform the following actions:

- Expand or Collapse a folder
- Duplicate a folder
- Cut or Copy a folder
- Paste content or another folder inside a folder
- Delete a folder
- Allow or suppress access to a folder
- Show or hide a folder
- Configure security rules for a folder
- View and edit properties for a folder

You can also customize the width of the Resources tree. To do so, place your cursor on top of the right edge of the Resources tree area, as shown in the following image, and drag the edge to achieve the desired width. Your new width is remembered, and displays the next time you sign in to WebFOCUS.



You can also collapse the Resources tree to allow more room for the content section. To collapse the Resources tree, click the arrow on the right side of the tree. Click the arrow again to expand the Resources tree.

My Workspace

My Workspace is the default workspace where all your newly created content resides, unless you specify an alternative location.

Note: Multiple workspaces are available in the full version of WebFOCUS. Optionally, you can make a different workspace or top-level folder a default saving location by configuring the Default Workspace Repository Path setting in the Administration Console. See the *ibi™ WebFOCUS®® Security and Administration* technical content for more details.

Content that you create in My Workspace automatically display in My Workspace view along with other private content you might have.

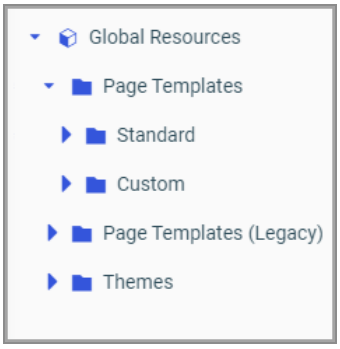
Use the Plus button or the +Content menu to create content.

Note: To access the +Content menu inside My Workspace, navigate to the My Content folder inside it.

Global Resources

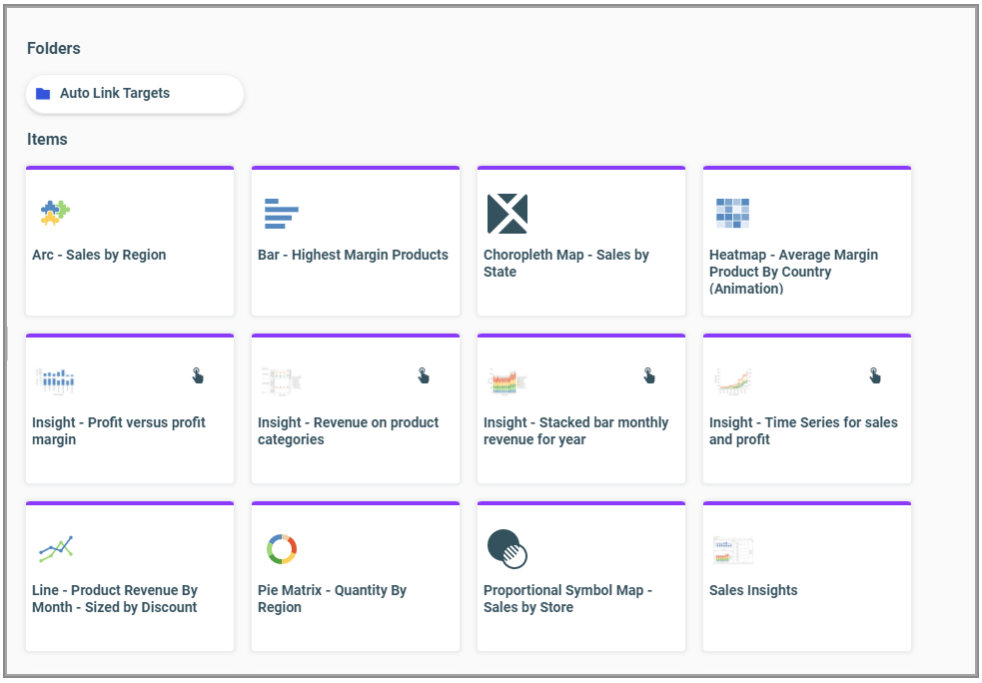
Administrators have access to a Global Resources folder on the Workspaces level in the Resources tree. The Global Resources folder, identified by the distinct icon , contains three subfolders: Page Templates, Page Templates (Legacy), and Themes. These subfolders

contain files that are used to style and format your portals and content in WebFOCUS Designer and Portal Page Designer. The Global Resources folder is shown in the following image.



Content Section

The content section displays the items contained within a workspace or folder that is currently selected. An example of the content section is shown in the following image.



If a resource contains folders and items, the folders are always displayed first, followed by the items. Items shown in the content section include reports, charts, pages, portals, and more.

You can right-click any folder or item to access the shortcut menu of options. The following options are available when you right-click a folder or item in the content section.

Expand/Collapse

Expands or collapses a folder. This option is only available for folders.

Run

Runs the report procedure or schedule.

Run in new window

Runs the selected item in a new browser window or tab.

Run deferred

Submits a report procedure or a schedule for deferred execution.

Run with SQL trace

Runs a report and includes an SQL trace of the report results.

Note: Run with SQL Trace option is not available for visualizations.

Run with different connection credentials

Prompts for database credentials prior to running an item.

Note: This option is only available to users who have been granted the Run Procedures with Different Connection Credentials privilege. It is used when running items that draw data from databases that are configured to use individual credentials. For more information, see the *ibi™ WebFOCUS® Security and Administration* content.

Schedule

Open the scheduling tool, where you can schedule a report procedure to be run. Scheduling options include Email, FTP, Printer, Report Library, and Repository.

View log

Open the Schedule Log Options dialog, where you can select whether to view the most recent log report for the schedule, or specify a time range for which to obtain log reports. This option is only available for schedules.

View

Enables you to open the URL or download a copy of the file to your browser. This option is available for URLs, Excel Workbooks, PDF, HTML, and Image Files.

Edit

Edits an item with the tool that was used to create it.

Edit with text editor

Edits an item in the Text Editor.

Create shortcut

Creates a shortcut to this item.

Duplicate

Makes a copy of the folder or item with an underscore and number appended to the title, for example, duplicating Sales_Report creates Sales_Report_1 in the same location. The number is incremented each time a duplicate is created.

Cut, Copy, and Paste

Cuts, copies, or pastes the folder and its contents or item.

Copy and update paths

Copies one or more items from one location to another with the internal path references automatically updated to be consistent with the target location. This option is available for charts, reports, documents, visualizations, pages, workbooks, schedules, and HTML files created in ibi™ WebFOCUS® App Studio.

Note: This feature only works when copying items between the folders that reside on the same hierarchical level in the repository.

Note: When you run the item that has been moved using this option, a warning might appear alerting you that the item has been modified outside of WebFOCUS InfoAssist. This does not affect the behavior of the item at run time. Save the item in WebFOCUS InfoAssist to prevent this warning from reappearing.

Delete

Deletes the folder and its contents or item.

Publish/Unpublish

Allows or suppresses public access to the content.

Show/Hide

Shows or hides the folder or item.

Share/Unshare

Shares content with all users that are permitted to access this content. Unshare stops sharing content with all users.

Security

Provides access to the following options:

Rules

Opens the rules defined for the folder or item. Here you can modify the rules for a given item.

Rules on this resource

Shows the security rules for the folder or item.

Effective policy

Shows the defined rules that specify the permitted functionality on the folder or item.

Owner

Allows you to set the resource owner, either Published (no specific owner), or a specific group or user.

Customizations

Provides access to the following options:

Remove my customizations

Removes your own customizations from a portal and its pages.

Remove customizations for all users

Removes all user customizations and custom pages created at run time.

Note: These options are only available for portals and portal pages.

Manage alias

Opens the Manage Alias dialog, where you can create an alias for the selected portal. This feature is only available to Administrators. This option is only available for portals.

Open item location

Redirects to the folder where the item is located. This option is only available for portals in the Portals view.

Comments

Provides access to the following options:

View comments

Opens the blog item and expands all comments.

Remove all comments

Clears all comments from the blog.

Note: These options are only available for blogs.

Unlink

Removes the page from all portals. This option is only available for portal pages.

Add to Favorites

Adds the item to the Favorites folder.

Remove favorite

Removes the Favorite from the list. This option is only available for Favorites.

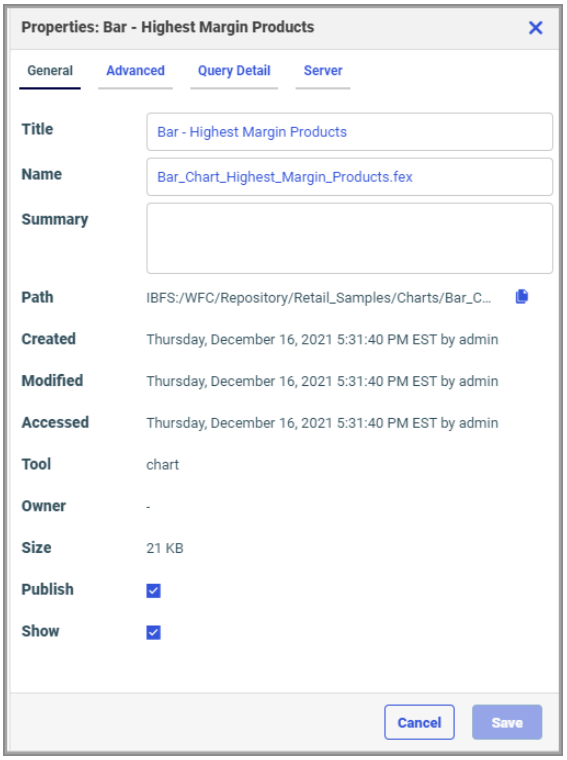
Properties

Opens the Properties panel to display the properties of the folder or item.

Folder and Item Properties

Authorized users can select the Properties option to review information about a folder or item, including when it was created, the date it was last modified, title, name, and settings that control the WebFOCUS Reporting Server and applications it accesses. There are also settings that control the functionality available to users when they access the folder, run, or schedule an item.

The following image shows the Properties panel for a bar chart.

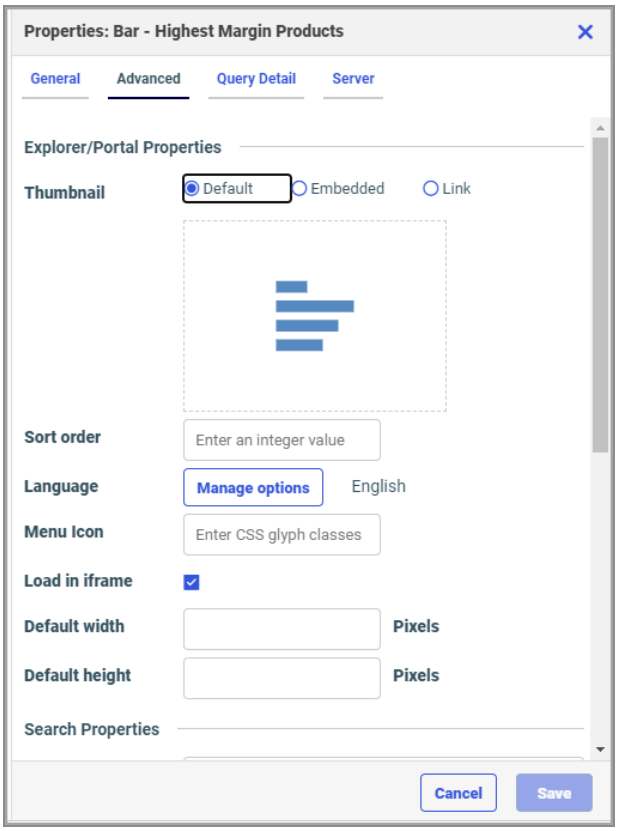


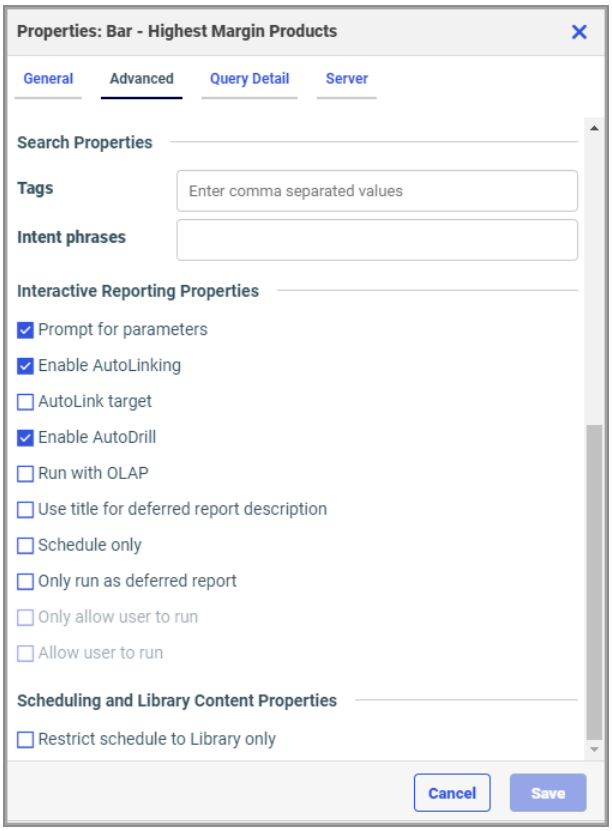
The General Properties tab includes the following settings:

- **Title.** Displays the value that you can use to identify the content in the Resources tree.
- **Name.** Refers to the unique name of the item or folder. You can change the name of the resource by editing this field.
- **Summary.** Displays a detailed explanation that provides additional information about the item.
- **Path.** Contains the full path of the folder or item in the WebFOCUS repository and the **Copy path** button.

- **Created.** Shows the date the folder or item was created.
- **Modified.** Shows the date the folder or item properties were last modified, and identifies the user that modified them.
- **Accessed** Shows the date the folder or item was last opened, and identifies the user that opened it.
- **Tool.** Specifies the type of an item.
- **Owner.** Identifies the user who created the folder or item.
- **Size.** Displays N/A bytes for folders. For items, displays the size in bytes.
- **Publish.** Provides an option to publish or unpublish the folder or item. An unpublished item displays the Not Published icon in the tile view and a check mark in the Not Published column in the list view.
- **Show.** Provides an option to show or hide the folder or item. A hidden item displays the Not Shown icon in the tile view and a check mark in the Hidden column in the list view.

The Advanced tab, which is shown in the following images, allows you to customize the functionality and behavior of the folder or item.


Properties: Bar - Highest Margin Products
General
Advanced
Query Detail
Server
Explorer/Portal Properties
Thumbnail
Default
Embedded
Link
Sort order
Enter an integer value
Language
Manage options
English
Menu Icon
Enter CSS glyph classes
Load in iframe
Default width
Pixels
Default height
Pixels
Search Properties
Cancel
Save


Properties: Bar - Highest Margin Products
General
Advanced
Query Detail
Server
Search Properties
Tags
Enter comma separated values
Intent phrases
Interactive Reporting Properties
Prompt for parameters
Enable AutoLinking
AutoLink target
Enable AutoDrill
Run with OLAP
Use title for deferred report description
Schedule only
Only run as deferred report
Only allow user to run
Allow user to run
Scheduling and Library Content Properties
Restrict schedule to Library only
Cancel
Save

The Advanced Properties tab includes the following properties.

Explorer/Portal Properties:

- **Thumbnail.** Allows you to preview and change the thumbnail for an item.
- **Sort order.** Specifies the order to list the folder in the tree or item within other items in a folder.

  > **Note:** The sort order setting does not take effect in the Portals view. It is only valid in the Content, and Favorites views.

- **Language.** Indicates the current language of your environment and contains the **Manage options** button, which opens the Language Properties dialog, where you can select a language.
- **Menu Icon.** Allows you to enter a CSS class for a custom menu icon that will display in the list view.
- **Load in iframe.** Grants or suppresses permission to load an item in an iFrame container.
- **Default width.** Sets a default width value for the item, when it is displayed inside a portal at run time.
- **Default height.** Sets a default height value for the item, when it is displayed inside a portal at run time.

Search Properties:

- **Tags.** Adds tag values to the items that display in the search results and portal lists.
- **Intent phrases.** Allows you to specify how you can interact with the repository item when using Mobile Voice.

  > **Note:** You cannot add intent phrases to My Content items. For more information on intent phrases, see the *Using ibi™ WebFOCUS®® Mobile Voice* technical content.

Interactive Reporting Properties:

- **Prompt for parameters.** Indicates whether to display the Autoprompt HTML page to allow the user to view and select parameter values. When this checkbox is clear, users still be prompted if there are any parameters that do not have a value supplied.

- **Enable AutoLinking.** Establishes drill-down links from column data to the target reports that you link together.
- **AutoLink target.** Identifies a report as the target report that is run when the drill-down link is triggered.

  > **Note:** The Auto Linking between reports only works if the target report contains a parameterized field that corresponds to one of the fields in the primary Auto Link report. For more information on Auto Linking, see the *ibi™ WebFOCUS® InfoAssist User's Manual.*

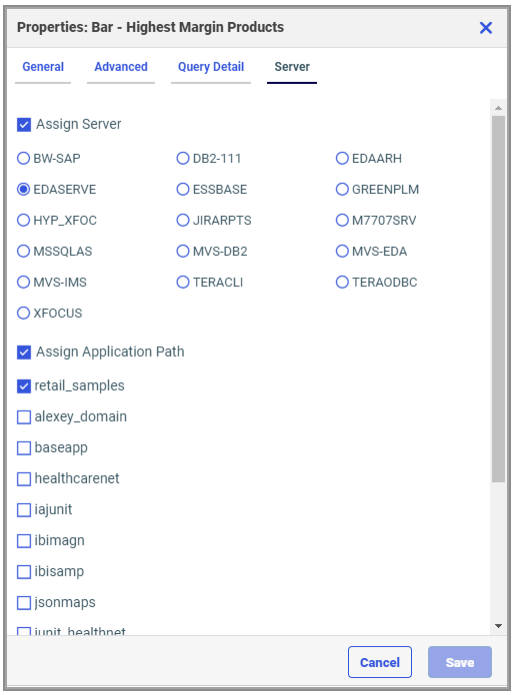
- **Enable AutoDrill.** Creates drill-down links in reports and charts that contain hierarchical data.
- **Run with OLAP.** OLAP-enables the report.
- **Use title for deferred report description.** Indicates whether or not to prompt for a custom deferred report description. If selected, this option gives you an alternative to being prompted for a custom deferred report description. If you want to disable prompting for custom deferred report descriptions for all reports, see the Custom Deferred Report Description setting content in the *ibi™ WebFOCUS® Security and Administration* technical content.
- **Schedule only.** Indicates that the report can only be scheduled using ReportCaster when the user does not have write access. This option is not available for reporting objects.
- **Only run as deferred report.** Runs the report in deferred mode.
- **Only allow user to run.** Specifies not to allow users to use WebFOCUS InfoAssistwith a reporting object. Depending on the effective policy, users can only use the Run or Run Deferred options.
- **Allow user to run.** Allows a user not permitted to access the Reporting Object tool to run the reporting object interactively, using the Run or Run Deferred options.

Scheduling and Library Content Properties:

- **Restrict schedule to Library only.** Prevents emails distribution for security-sensitive scheduled reports, and restricts them to the library distribution only.

The Query Detail Properties tab, which is shown in the following image, is only available for reports, charts, and visualizations. It shows which data elements, parameters, and conditions were used in an item.

The Server Properties tab, which is shown in the following image, allows you to manage the server and application path settings.



To change the server, select the **Assign Server** checkbox, and then select a server from the list. You can also change the application path in the same way.

By default, the Properties panel remains open while you browse between folders and items, allowing you to configure several resources quickly without closing the panel. To close the Properties panel, click the **Close** button in the upper-right corner of the panel.

Application Directories Area

The Application Directories area opens the WebFOCUS Reporting Server browser interface, where you can select a server from the list of configured reporting servers, as well as view and manage your server environment. The Application Directories area is shown in the following image.

From this area, you can perform the following tasks:

- Select a reporting server from the server selection dropdown list, located in the banner of the area.

  > **Note:** For more information on how to configure multiple Reporting Servers, see the *ibi™ WebFOCUS® Security and Administration* technical content.

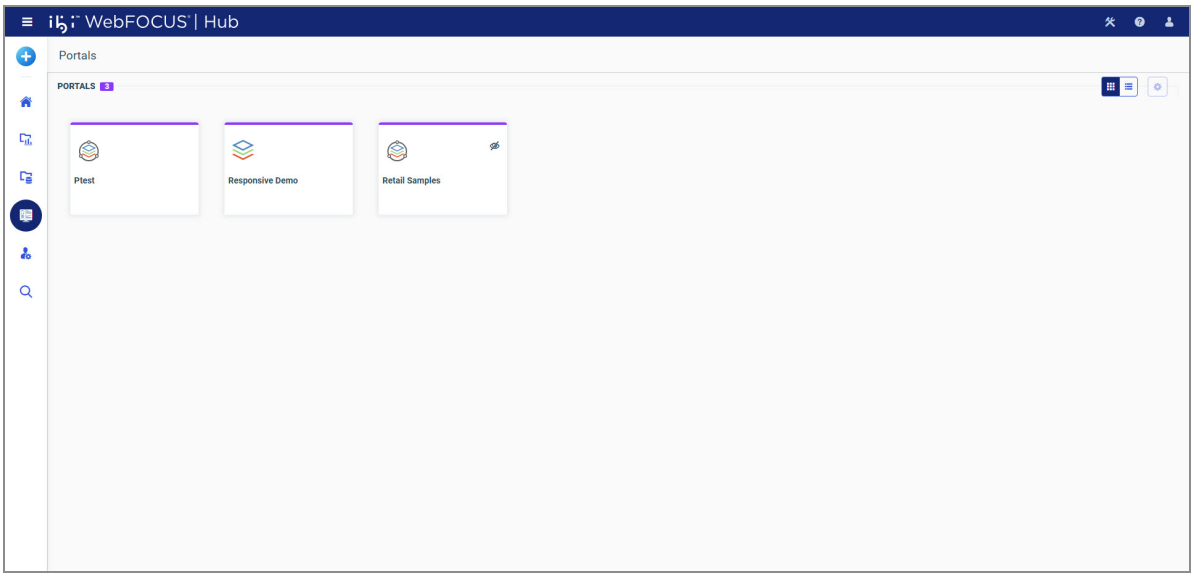
- Select, add, and configure data adapters.
- Create and manage adapter metadata.
- Control data access and security.

- Configure remote servers.
- Configure, edit, and run applications and deferred query processing.
- Configure communications and special services.
- Operate, monitor, tune, and troubleshoot your server.
- Edit configuration files.
- Migrate from a previous server release.
- Control aspects of your own environment.

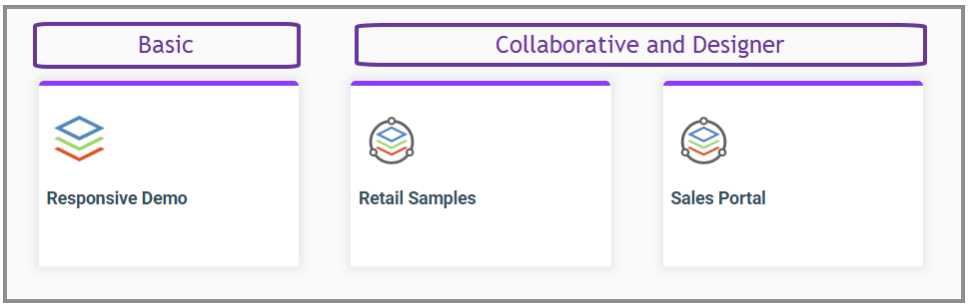
For more information on how to use the WebFOCUS Reporting Server browsing interface, see the *ibi™ WebFOCUS® Reporting Server Administration* technical content.

Portals Area

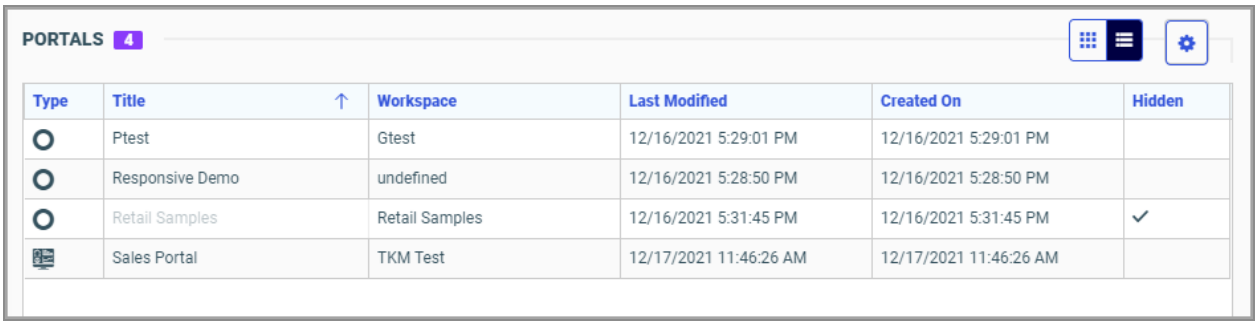
The Portals area displays all the portals that are currently available in your repository in one centralized location. Depending on your permissions, you can run and edit a portal from this directory. You can also add a portal to Favorites and view its properties. An example of the Portals area is shown in the following image.



There are three types of portals that can be accessed in the Portals area: basic, collaborative, and designer. These types of portals are distinguished by their icons. In the tile view, basic portals display with the vertical stack icon, while the icon for collaborative and designer portals shows the vertical stack inside a circle. The following image displays the two different icons annotated.



In the list view, you can see the icons in the Type column. Designer portals display with the distinct desktop icon, while all other types of portals are represented by the circle icon, as shown in the following image.



Note: If you need to create a basic portal in your environment, you must do that from the Portals node of the Legacy Home Page.

In the list view, you can modify your display by using the **Select Display Columns** button and selecting the columns that are useful for this type of content. For example, you can add the Path column and use the values displayed in this column to build a direct shareable URL to a specific portal.

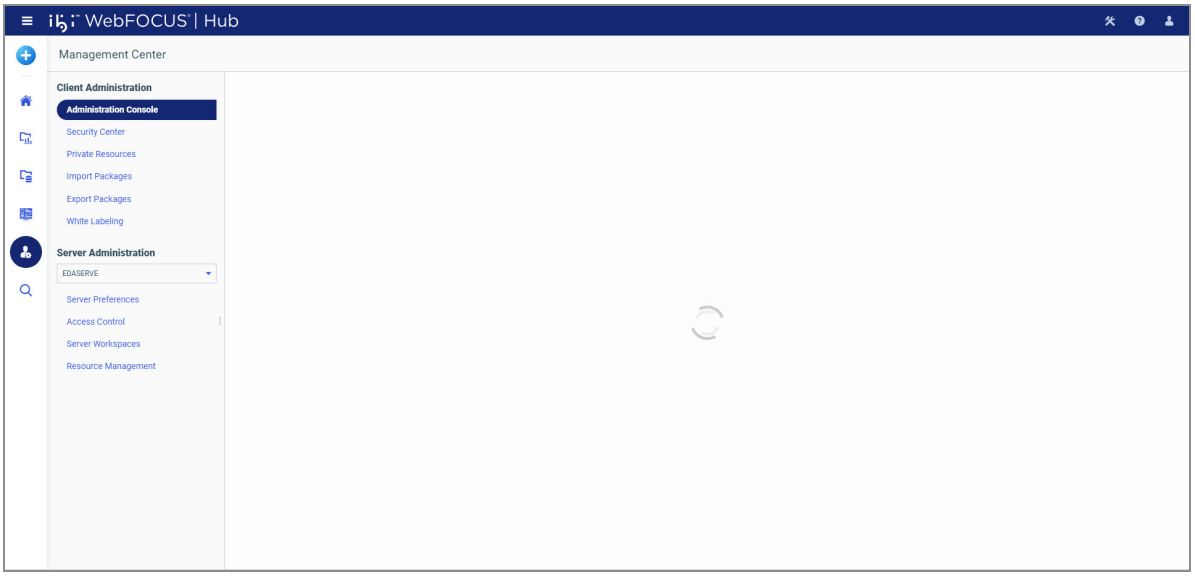
Note:

- When you change the tile view to List View in the Portal plug-in as an admin user, log out, and log in back into WebFOCUS as an admin user, List View is remembered.
- Changes made in the Choose column are remembered independently in (Home & Portal) plug-ins.
- Changing the view mode (Tile or List) in the Portal is reflected only in the Home plug-in and vice versa.

Management Center Area

The Management Center area contains tools for configuring your WebFOCUS Reporting Server and WebFOCUS Client administrative options. This directory is only visible to administrators.

The Management Center area is shown in the following image.



Note:
The default width of the left pane in the Manage Center page is 275 pixels. This is also the minimum width of the left pane. If you expand the left pane, double clicking sets it to the default width.

On the left side of the screen, you can access the menu, which is divided in two sections:

- **Client Administration.** Contains options for configuring the WebFOCUS Client.
- **Server Administration.** Contains options for configuring the WebFOCUS Reporting Server.

The Client Administration section provides access to the following options:

- **Administration Console.** Opens the Administration Console, where you configure, administer, and monitor the components of the WebFOCUS environment.
- **Security Center.** Opens the Security Center where you can define users and groups, and grant access permissions.

- **Private Resources.** Opens the Manage Private Resources window, where you can view and administer private resources for groups and users.
- **Import Packages.** Provides access to the Import facility of the Change Management feature, where you can upload and import files and packages.
- **Export Packages.** Provides access to the Export facility of the Change Management feature, which is used for moving application components between WebFOCUS environments.
- **Magnify Console.** Opens the Magnify Console, where you can specify settings, configure security, and perform maintenance and diagnostic tasks for Magnify.

Note: For more information on how to use the Client Administration options, see the *ibi™ WebFOCUS® Security and Administration* technical content.

The Server Administration section provides access to the following options:

- **Server Selection List.** Allows you to select among Reporting Servers that are currently configured in your environment.

  Note: For more information on how to configure multiple Reporting Servers, see the *ibi™ WebFOCUS® Security and Administration* guide.

- **Server Preferences.** Opens the WebFOCUS Reporting Server Preferences interface, where you can indicate preferences for Run Options, WebFOCUS Reporting Server browser interface appearance, Reporting Options, and Diagnostic Options.
- **Access Control.** Opens the Access Control page of the WebFOCUS Reporting Server browsing interface, where you can manage security providers, edit Access Control and Encryption settings, as well as register and show privileges for users, groups, and roles.
- **Server Workspaces.** Opens the Server Workspaces page of the WebFOCUS Reporting Server browsing interface, which provides a complete list of system variables and global variables.
- **Resource Management.** Provides access to the Resource Management tools, Resource Analyzer and Resource Governor. These tools allow you to discover how your data is being used, and then use that information to optimize your environment and improve performance.
- **Scalability.** Opens the Scalability page of the WebFOCUS Reporting Server browsing

interface, where you can stress-test your environment and run diagnostic procedures.

Note: For more information on how to use the Server Administration options, see the *ibi™ WebFOCUS® Reporting Server Administration* technical content.

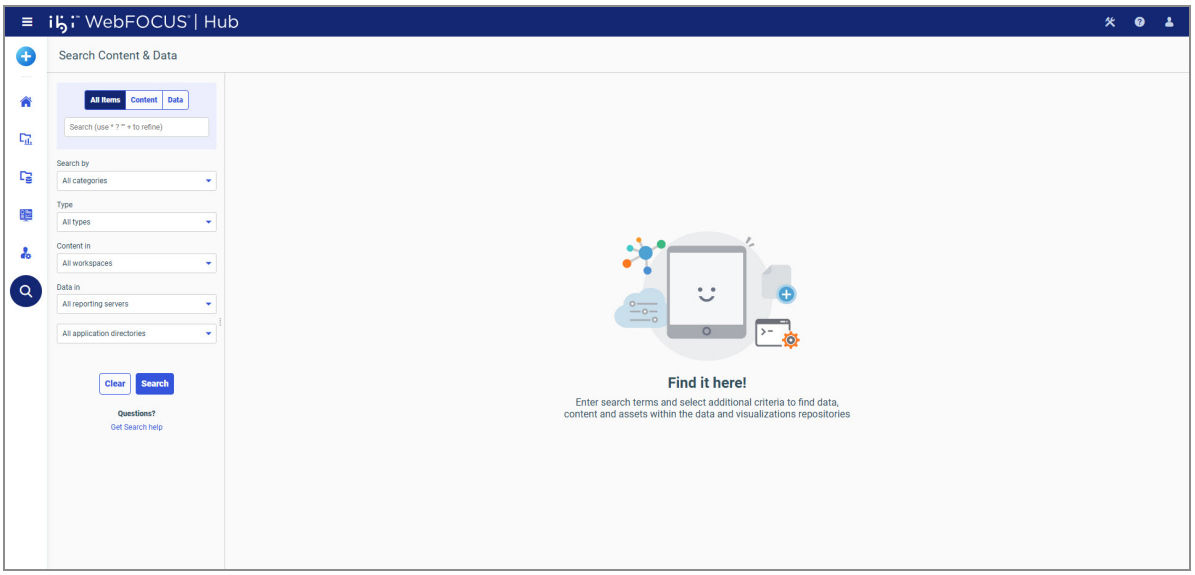
Search Content & Data Area

The Search Content & Data area of the Hub provides access to the search utility. This robust and intuitive functionality allows you to quickly bring in search results from the entire WebFOCUS environment. You can search for analytical content, master files, individual data files, databases, and more, viewing all your results at once or divided between content and data.

With the WebFOCUS search feature, you can:

- Search for keywords across the entire WebFOCUS environment.
- Run search from WebFOCUS Client, WebFOCUS Reporting Server, or the entire WebFOCUS environment.
- View the entire list of items that match a keyword, in tile and list views.
- Use syntax to filter your search results and run Boolean search queries.
- Narrow your search by applying multiple filters.
- Interact with items in the search results section and easily locate them in their original directories.

The Search Content & Data area is shown in the following image.



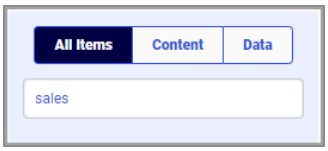
Note:
The default width of the left pane on the Search page is 275 pixels. This is also the minimum width of the left pane. If you expand the left pane, double clicking sets it to the default width.

The Search Content & Data area consists of the following sections:

- Text Input Bar
- Search Filters
- Results Toolbar
- Results Section

Text Input Bar

The Text Input Bar is where most of your search-related activity happens. Here you can enter a search term to quickly display all content and/or data items that match that term. Above the input bar, there are three buttons: **All Items**, **Content**, and **Data**. You can use these buttons to toggle between only content and only data results, as well as the option to see all results in the same search event. An example of the Text Input Bar is shown in the following image.



In addition to searching for a single term, you can refine your search directly within your input bar by using syntax. The table below lists the syntax symbols that you can use and explains how they affect the results of your search.

Symbol	Meaning	Usage Example
*	Multiple unspecified characters.	**Input:** sa* **Result:** sale, sales, safe, safety **Will not find:** Items that do not start with *sa*.
?	Single unspecified character.	**Input:** sa?es **Result:** sales, saves **Will not find:** samples
" "	Search the exact wording inside the quotation marks, including special characters.	**Input:** "sale?" **Result:** sale? **Will not find:** sales

Symbol	Meaning	Usage Example
+	Marks a term as required for results.	**Input:** +sales category **Result:** Items that include *sales* and both *sales* and *category*. **Will not find:** Items that only include *category*.

Using these symbols, you can make your search as precise or as wide as you like. To search for several optional terms, simply type them inside the input bar separated by a blank space. You can even combine several required and several optional search terms in one string. For example:

Input: +sales +category product retail

Result: Items that include *sales* and *category*; and, optionally, *product* and/or *retail*.

Will not find: Items that only include *product* or *retail* or both.

Keep in mind, that you do not need to put *and* or *or* into the search syntax to create Boolean operators. Use the above system to specify required and optional terms. If you do put *and* or *or* into the syntax, the tool treats these words as additional search terms. For example:

Input: sales and category

Result: Items that contain *sales*, *and*, and *category*, or combinations of the three terms.

Will not find: Exclusively items that include both *sales* and *category*.

Once you are happy with your keyword or search query syntax, click **Search** or simply press **Enter** on your keyboard. Otherwise, click **Clear** to remove your query from the Text Input Bar.

Search Filters

It is the best practice to opt for the search filters when searching for items in large or hierarchically complex repositories. By narrowing the search query, you can significantly improve the response time of your search event and make your search results more precise.

You can use the following filters to narrow your search:

- **Search by.** This filter allows you to select a category by which you run your search. Once you select a category, the keyword in the Text Input Bar becomes a search term in this particular category. The available options are: All categories, Title, Summary, Tags, and File Name. You can multi-select values in this filter. The default value is **All categories**.
- **Type.** If you know the type of item you are searching for, such as document, data source, image, portal, etc., you can specify it in this filter to narrow your search results to this file type. You can multi-select values in this filter. The default value is **All types**.
- **Content in.** This filter can be used when you want to narrow your search to a workspace. This filter is specific to the WebFOCUS Client and is inactive when the Data button is enabled above the Text Input Bar. You can multi-select values in this filter. The default value is **All workspaces**.
- **Data in.** If you know in which reporting server and/or application directory your search target resides, you can use this filter to narrow your query by making selections in two dropdown lists: Reporting Severs and Application Directories. This filter is specific to the WebFOCUS Reporting Server and is inactive when the Content button is enabled above the Text Input Bar. You can multi-select items in this filter. The default values are: **All reporting servers** and **All application directories**.

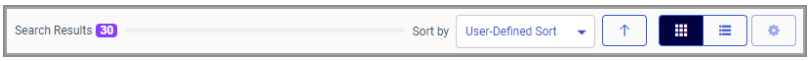
  > **Note:** To learn more about enabling multiple servers, see the *ibi™ WebFOCUS® Security and Administration* technical content.

Once you have made your selections, click **Search** to see your results display in the Results section. Otherwise, click **Clear** to bring your search options to their default state.

Note: You can enable wildcard and match case search options within Designer autoprompt filter dropdowns, accessible via new settings in the control settings panel.

Results Toolbar

The Results Toolbar is located above the Results section. Similar to the Page Toolbar in the Workspaces area, the Results Toolbar allows you to customize how you view the items that currently display in the Results section. An example of the Results Toolbar is shown in the following image.

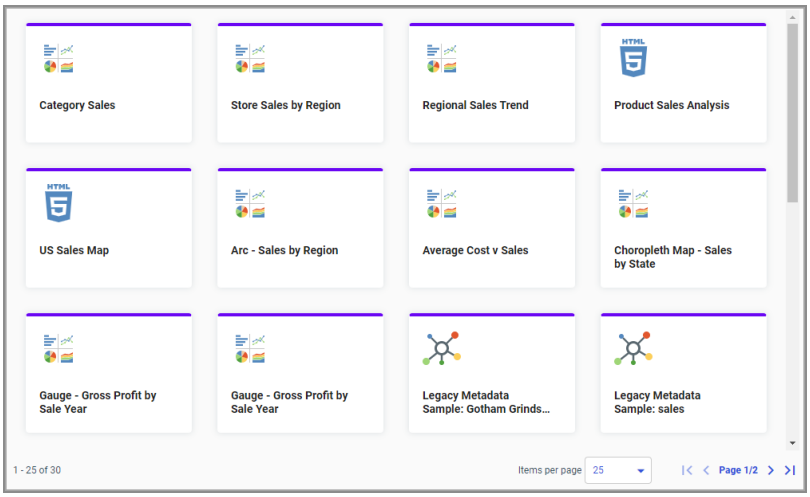


The Results Toolbar features the following elements and controls:

- **Search Results count.** Indicates the total number of search results after the search query is run.
- **Sort by.** Provides a dropdown list of sorting options that you can use to quickly locate an item in the results section. The options include: User-Defined Sort, Title, Name, Summary, Type, Path, Created On, Last Modified, Owner, Size, and Tags. The default value is User-Defined Sort, which is derived from the Sort Order property configurations of the displayed items. This list is only available in the tile view.
- **Sort items in ascending or descending order.** Alternates between ascending and descending orders for the selected sort option. This button is only available in the tile view.
- **View as tiles.** Displays your search results in the tile view.
- **View as list.** Displays your search results in the list view.
- **Select Display Columns.** Allows you to specify which columns display in the Results section. This button is only active in the list view.

Results Section

The Results section displays the items that match your search query. An example of the Results section is shown in the following image.



You can right-click any item to access its shortcut menu options. The following shortcut menu options are available in the Results section.

Run

Runs the item in the new browser window. This option is only available for the types of items that can be run.

Edit

Edits an item with the tool that was used to create it. This option is only available for the types of items that can be edited.

Edit with text editor

Edits an item in the Text Editor.

Locate Item

Opens the directory where the item resides and selects the item.

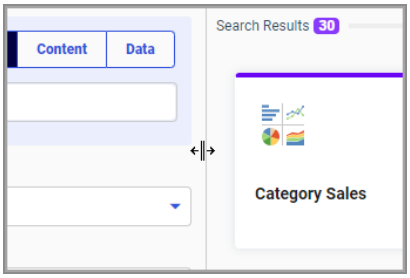
You can also toggle the view of your search results between the tile and list views by clicking the **View as tiles** and **View as list** buttons on the Results Toolbar. By default, the items display in the tile view.

The tile view allows you to see the thumbnails of your items. You can sort the items in the tile view by using the **Sort by** dropdown list in the Results Toolbar. Additionally, you can use the **Sort items in ascending or descending order** button to reverse the sort order. When you hover over an item that contains summary, the summary displays as a tooltip in both tile and list views.

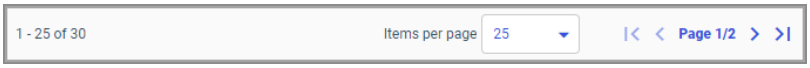
The list view is useful when you need to see a large number of items at a glance. In this view, you can sort your items by clicking any column title. Each column features a two-step

toggle sorting: ascending and descending. You can also specify which columns display in the list view by clicking the **Select Display Columns** button, and selecting the columns you want to view from the list.

You can customize the width of the search results section by placing your cursor on top of the right edge of the section, as shown in the following image, then clicking and dragging it to achieve the desired width. Your new width is remembered, and displays the next time you sign in to WebFOCUS.



You can navigate between the pages of your search results using the pagination bar on the bottom of the Results section. These options make it easy to view large amounts of data quickly, without scrolling. An example of the pagination bar is shown in the following image.



The pagination bar contains two components: a record count that dynamically changes as you move between pages and a set of controls that you can use to advance pages, return to pages, or enter specific page numbers. You can use the **Items per page** dropdown list to increase or decrease the number of items displayed on a single page. The **First Page**, **Previous Page**, **Next Page**, and **Last Page** buttons allow you to navigate between pages. The page number in the middle indicates the current number of the page that you are viewing. You can click this number, and enter a new number to jump to a different page.

Indexing Content and Data

On occasion, you might need to index the content and data in your environment to ensure they appear correctly in your search results. Indexing in WebFOCUS is a quick and simple process. Once your content and data are indexed, all subsequent changes to the repository content and data directories are indexed automatically by WebFOCUS.

Index Content and Data

Procedure

1. Sign in to WebFOCUS as a developer or administrator.
2. In the WebFOCUS Hub, in the Application Directories area, from the Servers dropdown list, select the server that you want to index.

   > **Note:**
   > For more information on how to configure multiple Reporting Servers, see the *ibi™ WebFOCUS® Security and Administration* technical content.

3. Right-click the **Applications** node, and then click **Properties**.

   The Properties panel opens. The following search index options are available:

   Files:

   Files from all application directories

   Indexes files in the WebFOCUS Reporting Server and the files that belong to the mapped directories, as configured in the properties under the Location group below.

   Files only from application directories in defined application path

   Indexes only the files that appear in the application directories in defined application paths.

   Location:

   All regular directories & marked mapped directories.

   Indexes application directories under the APPROOT and the application directories with the **Include in search index** option enabled.

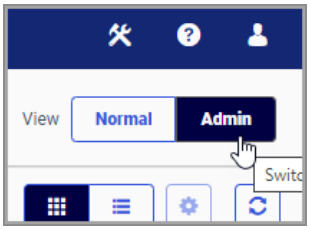
   All mapped directories.

   Indexes every mapped directory regardless of whether it has the **Include in search index** option enabled.

4. Select an indexing option and click **Save**.

Your WebFOCUS Reporting Server data is now indexed.

5. Navigate to the Workspaces area and switch to the Admin view, as shown in the following image.



> **Note:** You must be signed in as an administrator to switch between Normal and Admin views.

6. In the Resources tree, right-click the **Workspaces** node, and then click **Properties**.

   The Properties panel opens.

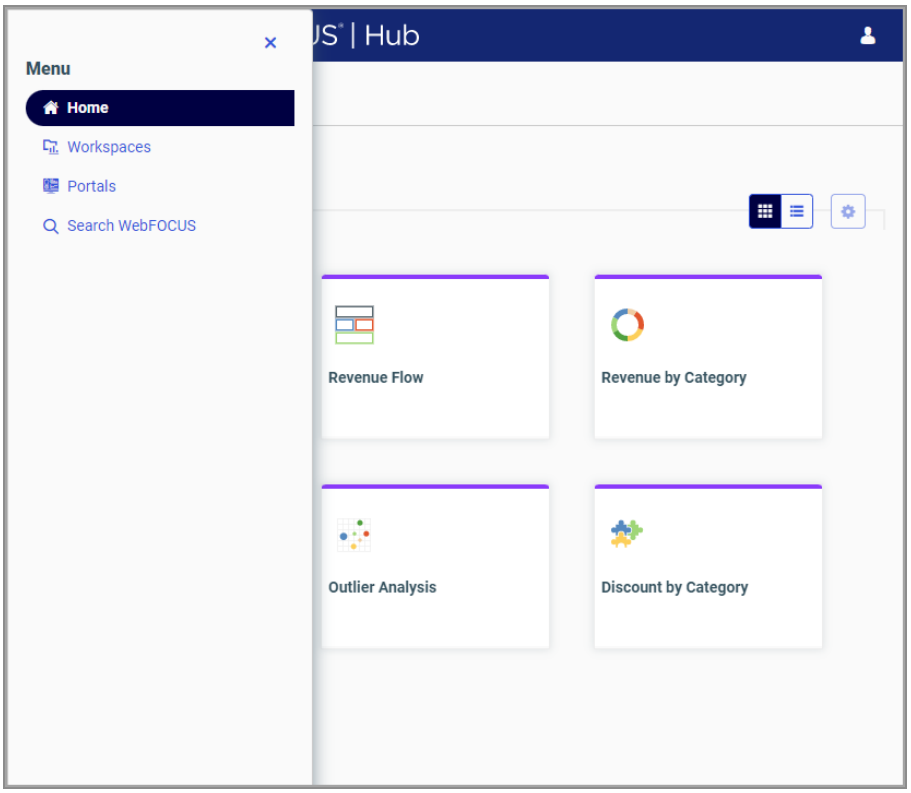
7. Click **Refresh Search Index**.

   Your WebFOCUS Client content is now indexed.

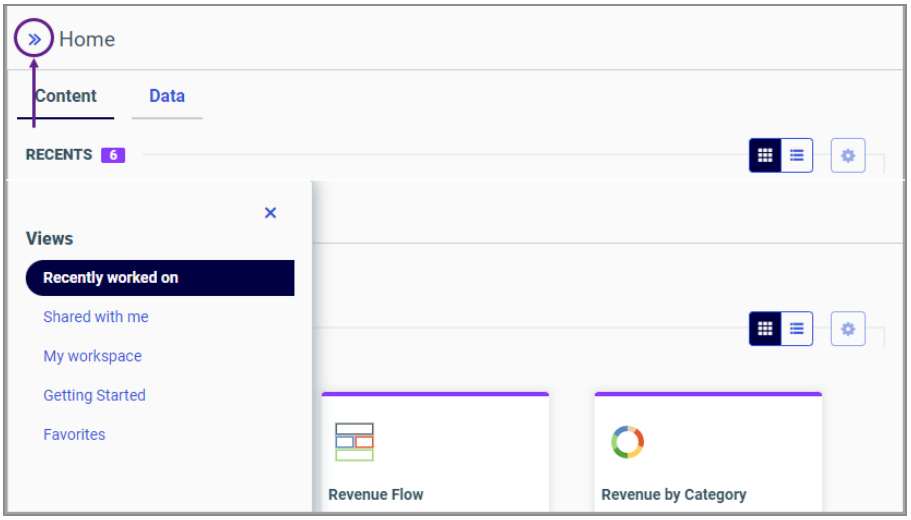
Viewing the Hub on Mobile Devices

The ibi™ WebFOCUS® Hub is optimized for viewing on mobile devices. It automatically adjusts to a smaller screen or browser width. Additionally, there are several interface and functionality changes that occur when you access WebFOCUS across different devices. From the tablet or phone, the Hub only allows browsing or searching for content and running visualizations.

When you view the Hub on a mobile device, you get access to the features and elements that are optimal for mobile browsing and interaction. Most navigation elements are hidden from view to allow more space for your content. The hamburger menu in the upper left corner of your display lets you navigate between the four available areas: Home, Workspaces, Portals, and Searching WebFOCUS. The expanded hamburger menu is shown in the following image.



You can navigate between the views of the Home area by tapping the arrow next to the Home area title, as shown in the following images.



The banner menus are also hidden in the mobile view. To access the functionality available from the banner, you need to use the full desktop version of the software. The Sign Out option is available from the user menu in the upper-right corner of your mobile display.

You can run content in the mobile view by double-tapping an item. Select shortcut menu options are also available on mobile devices. To access the shortcut menu options, tap and

hold the item. The shortcut menu options are context-sensitive, and vary, depending on the item or element you want to access.

To navigate between workspaces and folders on a mobile device, use the Resources tree or the breadcrumb trail in the Workspaces area. The arrows between the directories on the breadcrumb trail allow you to switch between different folders.

You can also search, switch between list and tile views, refresh and sort content in the mobile view. These functions behave in the same way as they do in the full desktop view.

Configuring and Using Your ibi WebFOCUS Environment

From the WebFOCUS® Hub, you can create new workspaces or folders to organize content in your environment. You can also add thumbnails to view content easily, and add content to the Favorites view. Additionally, you can create blogs, URLs, shortcuts, and other essential items that can enhance your content, if these items are enabled by your administrator.

This topic provides information about how you can create workspaces, configure folders, and further customize and use your WebFOCUS environment.

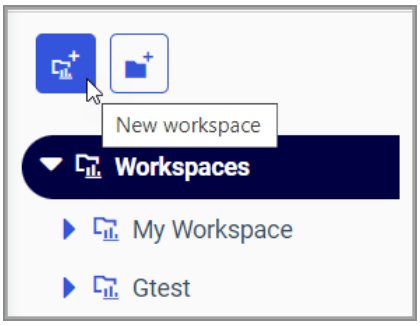
Creating New Workspaces and Folders

Your WebFOCUS Hub is the central location for all WebFOCUS tasks. Setting it up in a way that is convenient, secure, and efficient helps you get the most out of your work. The Workspaces area opens the content section, and provides access to the available workspaces. Workspaces and folders that are located in the Resources tree organize all of your content items. Authorized users can create additional workspaces or folders, as well as customize the default structure of their view.

Create a Workspace

Procedure

1. In the Workspaces area, in the Resources tree, click **Workspaces**.
2. Click the **New workspace** button above the Resources tree, as shown in the following image.



   The New Workspace dialog opens.
3. From the Type dropdown list, click the type of workspace you want to create.

   The options include:

   - **Enterprise workspace.** Supports installations of WebFOCUS that affect a single enterprise and are organized by department, and content, within that enterprise.
   - **Tenant workspace.** Supports installations of WebFOCUS that affect multiple enterprises, and are organized by the tenant clients of a software as a service vendor.
4. Type a Title for your workspace.

   > **Note:** The workspace title can be 256 characters or fewer.

   The Name field populates with the same text as the Title, automatically. You can edit the Name at any time.

   > **Note:** The workspace name can be 64 characters or fewer.
5. Select the **Create WebFOCUS Reporting Server Application** checkbox if you want to add an application folder to the WebFOCUS Reporting Server for your new workspace.
6. Click **OK**.

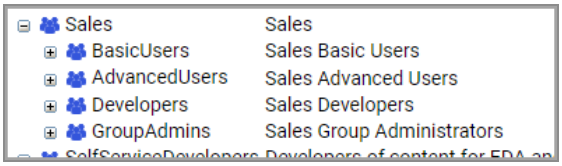
The content section refreshes, and your new workspace now appears in the Resources tree. Expand the new workspace in the Resources tree to view the My Content and Hidden Content folders. These folders are automatically created with the new workspace.

- **My Content.** Stores all of your personal folders and content. You can share these items to make them available to other users. To share a resource, right-click the item and then click **Share**.

  > **Note:** Shared resources appear in a Shared Content folder for users with which you shared the resources.

- **Hidden Content.** Store all of your current procedures, utility items, and other resources that you do not want to show to other users. The Hidden Content folder displays the **Not shown** icon .

Additionally, by default, four new user groups are automatically created in the Security Center. Those users include Basic Users, Advanced Users, Developers, and Group Administrators. By assigning users to these groups, you can quickly grant privileges according to these predefined roles. Sales workspace users that were created in the Security Center are shown in the following image.



For more information about workspaces and users, see the *ibi™ WebFOCUS® Security and Administration* technical content.

Create a Folder

Procedure

1. In the Resources tree, select the workspace or folder where you want to create a new folder.
2. Click the **New folder** button above the Resources tree; alternatively, click the **+Content** button, point to **Other**, and then click **Folder**.

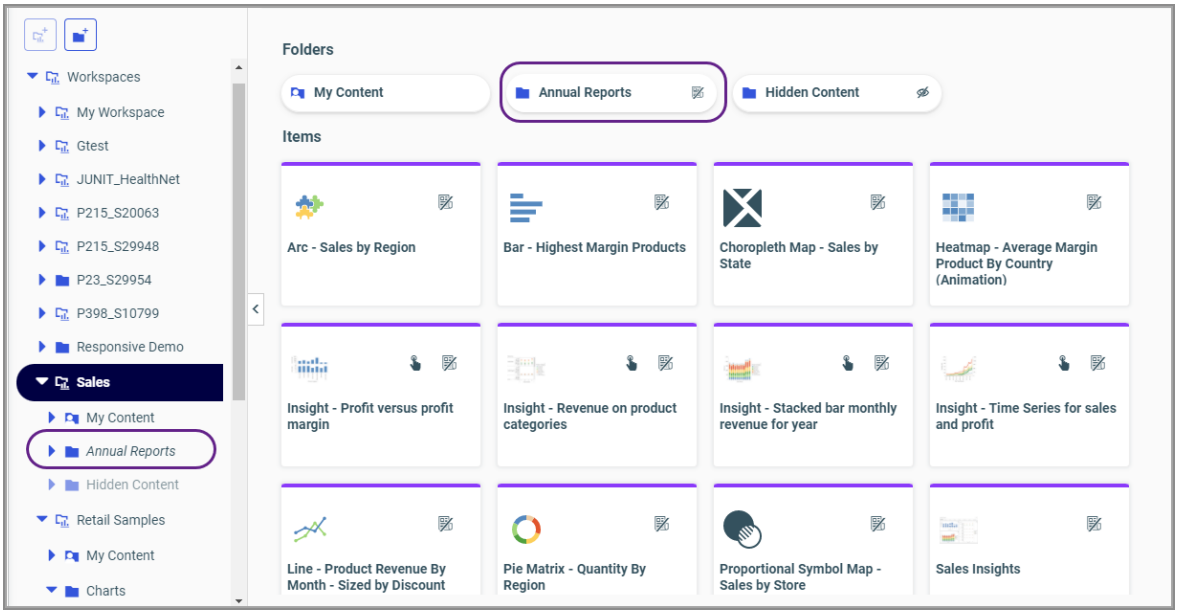
The New Folder dialog opens.

3. Type a Title for your folder.

   The Name field populates with the same text, automatically. You can edit the Name at any time.

4. Click **OK**.

   The new folder is created and is now available in the Resources tree. Unlike a new workspace, a new folder is not published by default, so when it first appears in the content section, it displays the Not published icon. Additionally, the title shown in the Resources tree is italicized. An example of a new folder is shown in the following image.



To publish a new folder, right-click it, and then click **Publish**. By default, when you publish a folder, you automatically publish all its contents as well.

Dragging and Dropping Folders and Files

You can drag and drop folders or files from the content section to other folders within the content section, or to other folders within the repository tree. You can also drag and drop folders from the repository tree to other folders within the repository tree, or to other folders within the content section.

You can drag and drop items, or press and hold the **Ctrl** key to drag and drop copies of items. Drag and drop functions the same as the cut-and-paste options from the context

menu. Drag and drop while holding the **Ctrl** key functions the same as the copy-and-paste options from the shortcut menu.

> **Note:** You can select multiple items by holding the **Ctrl** key while selecting each item.

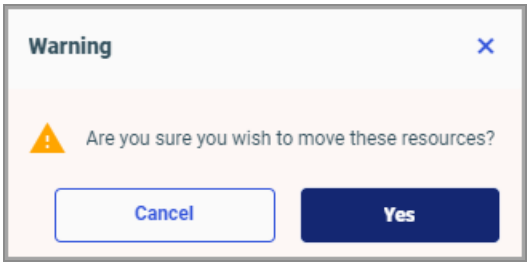
Dragging Indicators

When dragging an item, a thumbnail displays for that specific item type. If you select multiple items, a thumbnail for one of the dragged items displays.

If you drag an item over an area where it cannot be dropped, a No icon displays.

Dropping Indicators

When dropping an item, a Warning message displays, as shown in the following image:



Click **Yes** to move the item.

Click **Cancel** to cancel the operation.

Adding Content to Favorites

You can create a list of favorites to easily access the items that are most important to you. When you save content as a favorite, it automatically appears in the Favorites view of the Home area. Here, you can interact with your content and view its properties.

Add Content to Favorites

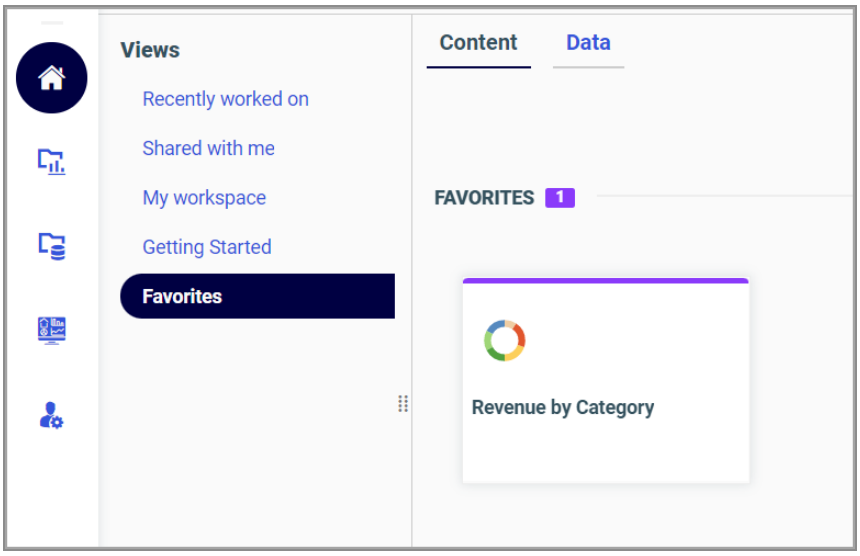
Procedure

1. Right-click an item in the Home, Portals, Workspaces, or Application Directories area of the WebFOCUS Hub, and then click **Add to Favorites**.

   > **Note:** Standalone portal pages cannot be added as favorites. You can add them to collaborative portals, and then add collaborative portals as favorites.

2. Navigate to the Home area by clicking the Home icon on the side navigation bar or by selecting **Home** from the hamburger menu, then click **Favorites**.

   The item is displayed in the Favorites view, as shown in the following image.



   Note that your Favorites view is divided into two tabs: Content and Data. Under the Content tab, you can see the items that you saved as favorites from the WebFOCUS Client side. The Data tab displays the items that reside in the WebFOCUS Reporting Server. Both types of items have shortcut menus that vary depending on the nature of the item and your permissions. You can remove an item from this view by right-clicking it and clicking **Remove from Favorites**.

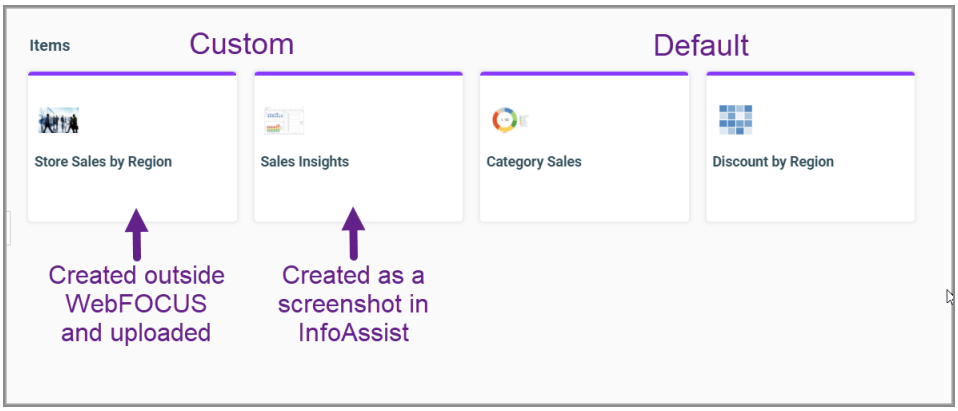
Adding Thumbnails to Content Items

To provide additional context to your items and simplify navigation, you can add custom thumbnails to your content items. These thumbnails might be created from any image files on your machine. You can also create thumbnails from the image files that can be found in your repository.

There are two types of thumbnails in WebFOCUS:

- **Default.** Assigned to an item by WebFOCUS in the absence of a custom thumbnail.
- **Custom.** Created either from an uploaded image or from a screenshot in WebFOCUS InfoAssist.

Examples of custom and default thumbnails are shown in the following image.



Thumbnails are only visible in the tile view.

Add Thumbnails to Content

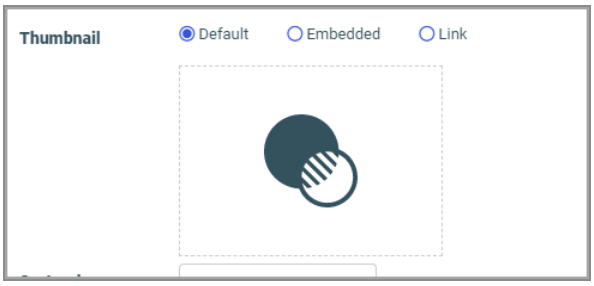
Procedure

1. Right-click a content item to which you want to add a thumbnail, and then click **Properties**.

   The Properties panel opens.

2. Click the **Advanced tab**.
3. In the Thumbnail property, choose one of the following options:
   - **Default.** Populates the thumbnail with the default graphic, as shown in the

following image. This is a default option.

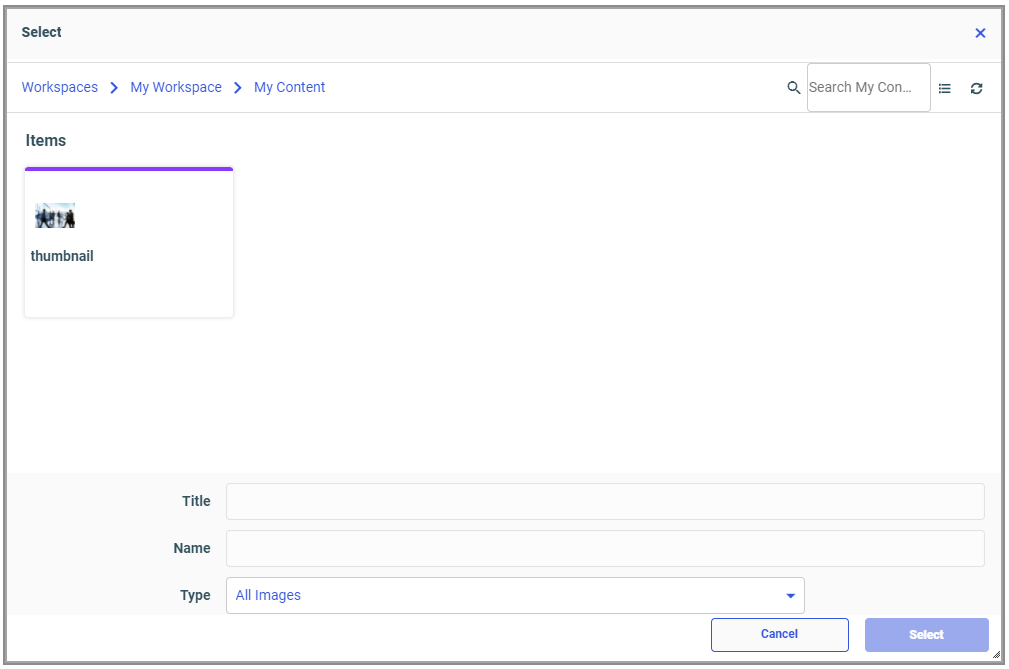


- **Embedded.** Enables you to choose a custom image from your machine.

  In the Open dialog, select an image file and click **Open**. The custom image displays in the preview section of the Thumbnail property, as shown in the following image.

  To change an image, click **Browse** and select another image file.

- **Link.** Opens the Select dialog, where you can navigate to any available image file in your repository, as shown in the following image.



To change an image, click **Browse** and select another image file in your repository.

4. Once the thumbnail is selected, click **Save** in the Properties panel.

   The thumbnail displays in your repository.

Assigning Tags to Content Items

To refine a search for content within a workspace or folder in your repository, you can assign tags to content items. These tags provide additional search criteria that you can use to identify related content items quickly. Tags display as a column in the list view.

Assign Tags to Content

Procedure

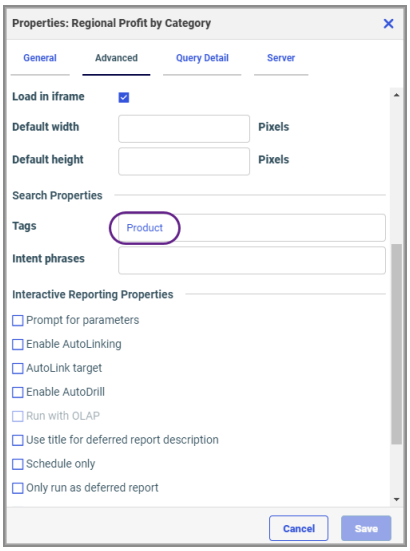
1. Right-click a content item that you want to assign to a tag, and then click **Properties**.

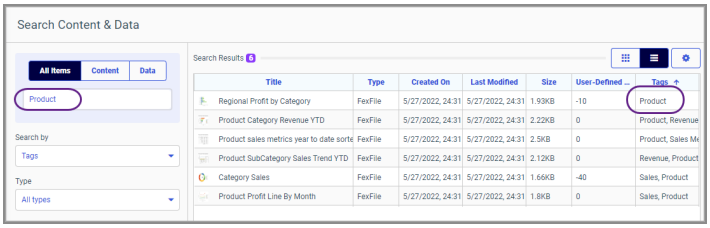
   The Properties panel opens.

2. Click the **Advanced** tab.

3. In the Tags field, type the name of your tag, and then click **Save**.

   To test the tag you assigned to the item, perform a search. The tag and item should appear in the search results. An example of a Product tag is shown in the following images.





You can assign multiple tags to a single item, by separating them with a comma, as shown in the following image.

Creating Shortcuts

You can create shortcuts to repository files and Master files. Once a shortcut to a Master file is created, you can use it to build visualizations and reports. Once a shortcut to a repository file is created, you can copy, delete, edit, and run this item. You can also publish and share your shortcuts to make them available for other users and groups.

Note: Only users with the **opShortcut** privilege are able to create shortcuts. For more information on privileges, see the *ibi™ WebFOCUS® Security and Administration* technical content.

Create a Shortcut to a Repository File

Procedure

1. Select the workspace or folder where you want your new shortcut to reside.
2. In the +Content menu, point to **Other**, and click **Shortcut**.

   The New Shortcut dialog opens.
3. Click **Browse**.

   The Select dialog opens.
4. Using the breadcrumb trail, navigate to the resource of your choice, such as folder, report, chart, or visualization, and then click **Select**.

   The Title field populates with the name of the original item and the word *Shortcut*. For example, if you create a shortcut to the item *Chart1*, the shortcut title is *Chart1 - Shortcut*.
5. Optionally, you can edit the Title and populate the Summary field.
6. Click **OK**.

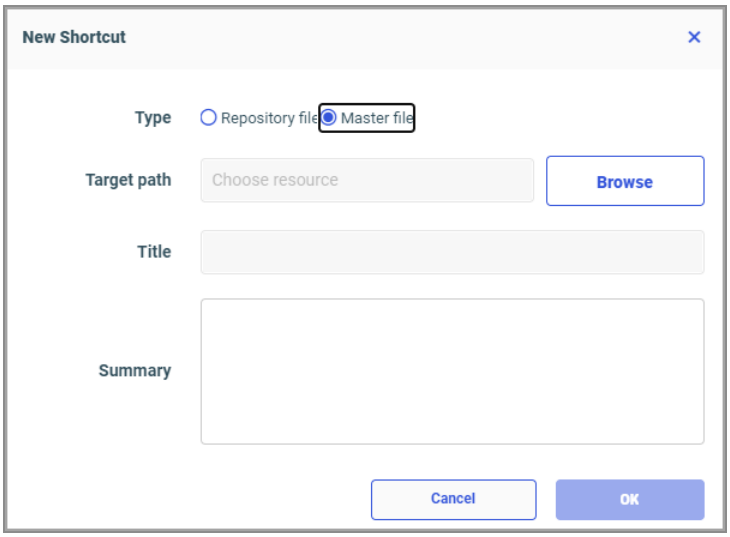
   The new shortcut appears in the selected location.

Create a Shortcut to a Master File

Procedure

1. Select the workspace or folder where you want your new shortcut to reside.
2. In the +Content menu, point to **Other**, and click **Shortcut**.

   The New Shortcut dialog opens.
3. Click the **Master file** radio button, as shown in the following image.



4. Click **Browse**.

   The Select dialog opens.

5. Navigate to the Master File to which you want to create a shortcut, and then click **Select**.

   The Title field populates with the name of the original item.

6. Optionally, edit the Title and populate the Summary field.

7. Click **OK**.

   The new shortcut appears in the selected directory.

Creating URLs

You can create URLs to web pages and store them within the repository. These URLs can further enhance analytics, by providing an additional interactive context to your data. You can run a URL straight from your repository, use it in a portal, or add it to a personal page. If your URL is optimized for use in an iFrame, you can embed it within a container on a page. You can also publish and share a URL to make it available to other users and groups.

Note: Some web pages cannot be run inside an iFrame or inside the preview Run window on the WebFOCUS Hub. You can run these web pages in a new browser tab or window.

Create a URL

Procedure

1. Select the workspace or folder where you want your new URL to reside.
2. In the +Content menu, point to**Other**, and click **URL**.

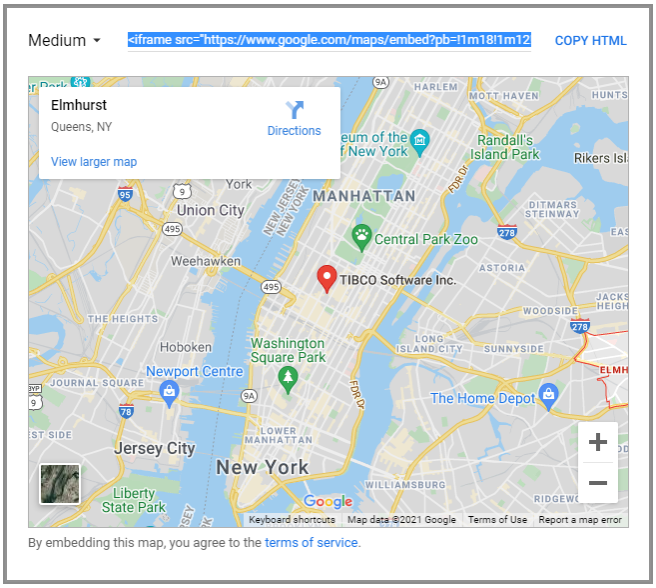
   The New URL dialog opens.
3. Type a Title for the URL, type the address of the URL, and then click **OK**.

   The URL now appears in your selected location.

Embed an iFrame-Optimized URL in a Portal or Page

Procedure

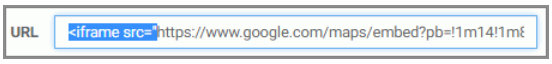
1. Copy an iFrame-optimized URL from the web, as shown in the following image.

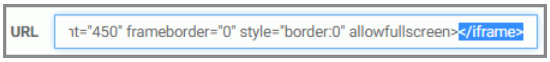


2. Select the workspace or folder where you want your new URL to reside.
3. In the +Content menu, point to**Other**, and click **URL**.

   The New URL dialog opens.

4. Populate the Title field, and paste the copied URL in the URL field.
5. Remove any iFrame related syntax that surrounds your URL. Examples are shown in the following images.



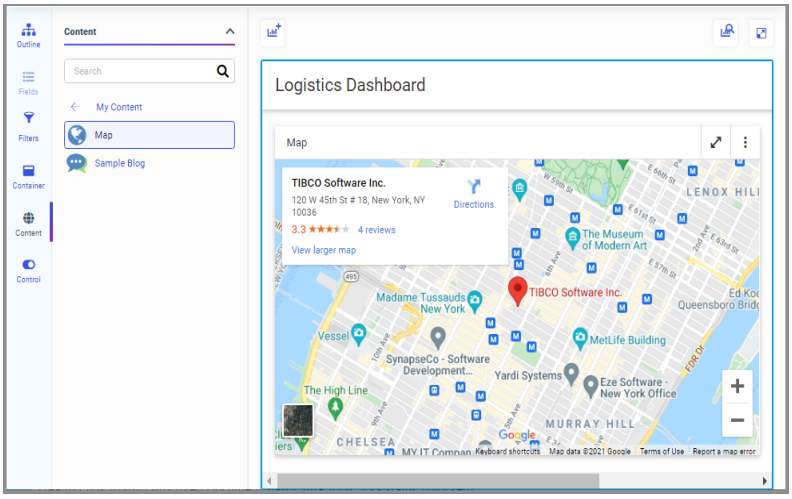


6. Click **OK** to close the New URL dialog.

   Your URL item is complete and ready to be displayed in a portal or page.
7. Click the plus button and then click **Assemble Visualizations**.

   The WebFOCUS Designer opens.
8. Add your new URL to the page.

   The URL content displays within the container, similar to other content items, as shown in the following image.



> **Note:** This procedure is applicable to portal pages and collaborative portals.

Creating Blogs

You can create blogs and include them in your pages and portals. A blog is an interactive content item that operates as commonly seen blogs on the internet, and allows users to

post and view comments. Blogs abide by the same security rules that apply to other items in the repository. You can publish, unpublish, hide, and move blogs between workspaces or folders. You can also share blogs with other users and groups.

Note: This feature is available in the full version of WebFOCUS.

Create a Blog

Procedure

1. Select the workspace or folder where you want your new blog to reside.
2. In the +Content menu, point to **Other**, and click **Blog**.

   The New Blog dialog opens.
3. Type the requested information in the dialog, as follows.
   - **Title.** Identifies the blog in the Resources tree.
   - **Summary.** Provides an optional explanation of the blog. It is displayed in the tooltip, when you hover over the blog.
4. Click **OK**.

   The Comments window opens.
5. Click the **Add comment** link to add a new comment.
6. Once you are done adding and editing comments, click **Post**, and close the Comments window.
7. You can optionally interact with comments using the following commands:
   - Click the **Refresh** icon to refresh comments.
   - Click the **Search** button , and type a keyword or keywords in the search field, to search through comments. You can specify the search criteria by clicking the dropdown arrow and selecting search criteria, such as username, content, or meta tags.
   - Click the **Remove All** button to remove all comments from all users.

     Remove All is only available to users with the Manage Comments privilege.

You can now publish, share, and add your blog to a portal page or portal.

Uploading Files

In addition to creating content using Db2 Web Query, you can upload other files, such as images and documents. These files can be used to enhance visualizations and shared with other users and groups.

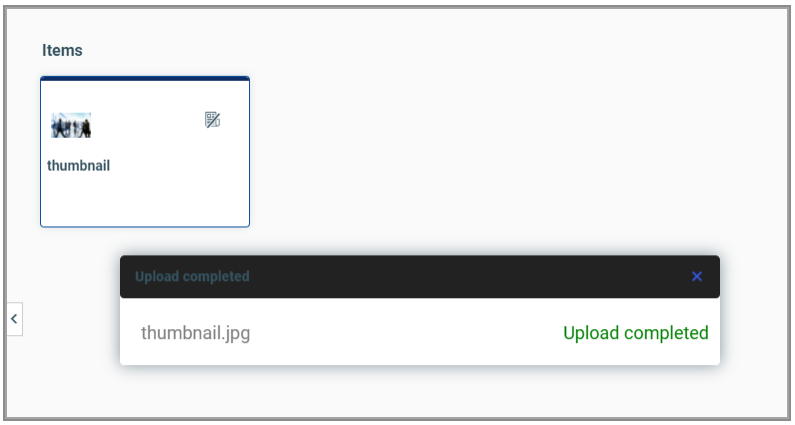
Upload Files From the + Content Menu

Procedure

1. Select the workspace or folder where you want your uploaded file or files to reside.
2. Click the **+ Content** button, point to **Other**, and then click **Upload File**.

   The Open dialog opens.
3. Select one or multiple files from your machine and click **Open**.

   The file uploads to your selected directory, and the *Upload completed* message appears, as shown in the following image.



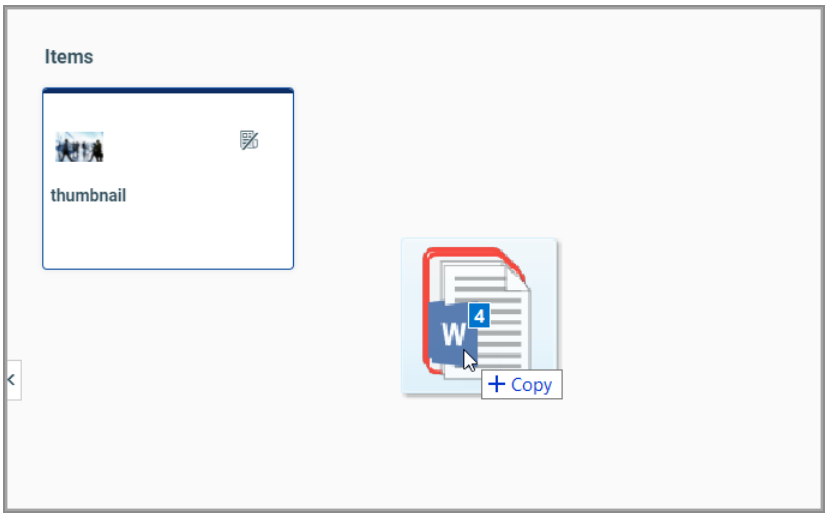
4. Close the *Upload completed* message and proceed with using the uploaded file.

Note:
When you upload an image, such as a .bmp, .jpg, .jpeg, .gif, or .png file, to the repository, an embedded thumbnail of the image automatically generates in the Web Query Explorer. To change the thumbnail that appears in the Web Query Explorer, right-click the thumbnail, and open the Properties panel. Click the **Advanced** tab, and modify the thumbnail.

Upload Files by Dragging to the Explorer

Procedure

1. In the Workspaces area, select the workspace or folder where you want your uploaded file or files to reside.
2. Drag one or multiple files from your machine directly to the explorer, as shown in the following image.



   The file uploads to your selected directory and the *Upload completed* message shows the status of each uploaded file. If an upload fails, the error appears in red in the *Upload completed* message.
3. Close the *Upload completed* message and proceed with using the uploaded files.

> **Note:**
> When you upload an image, such as a .bmp, .jpg, .jpeg, .gif, or .png file, to the repository, an embedded thumbnail of the image automatically generates in the Web Query Explorer. To change the thumbnail that appears in the Web Query Explorer, right-click the thumbnail, and open the Properties panel. Click the **Advanced** tab, and modify the thumbnail.

Sharing Content in ibi WebFOCUS

Each workspace in the repository, comes with the private My Content folder. Whenever you create content inside the My Content folder, it automatically displays in the My workspace view of the Home area. This content remains private and only visible to you, unless you share it with other users and groups. You can share content in one of two ways:

- **Share with all users.** This method makes the content available to all users that have access to the workspace.
- **Share with specific users and groups.** This method allows you to choose which users and groups are able to access to your private content.

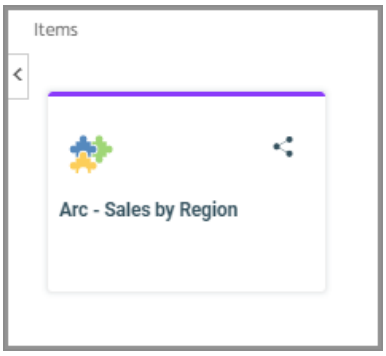
In both scenarios, you can revoke access to your content by right-clicking it and clicking **Unshare**.

Share Content With All Users

Procedure

1. Navigate to a private content item in one of the following ways.
    a. In the Resources tree, navigate to a workspace of your choice and open the **My Content** folder.
    b. Open the Home area and navigate to the My workspace view.
2. Right-click the item that you want to share, and then click **Share**.

    When viewing the item inside the My Content folder, notice that the Share icon now displays on the tile, as shown in the following image.



The item is now shared with all users that have access to this workspace.

3. To unshare the item, right-click it, and then select **Unshare**.

Share Content With Specific Users and Groups

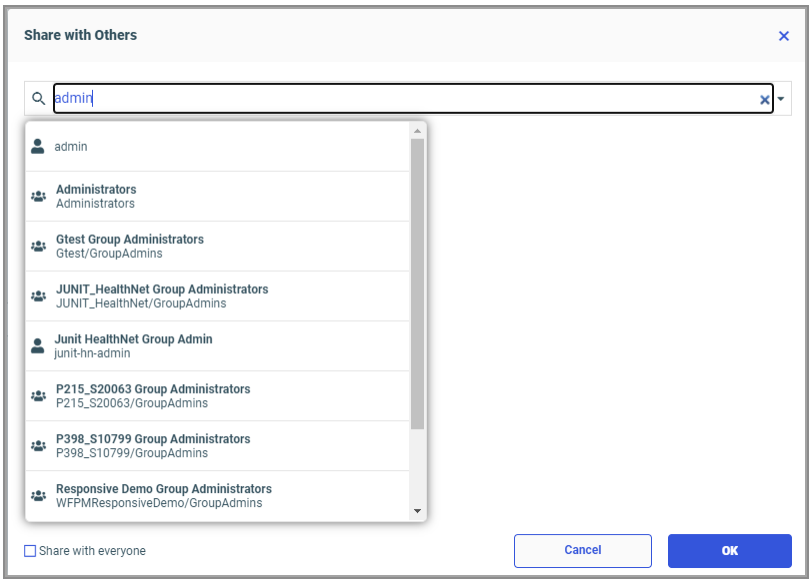
Procedure

1. Navigate to a private content item in one of the following ways.
   a. In the Resources tree, navigate to a workspace of your choice and open the **My Content** folder.
   b. Open the Home area and navigate to the My workspace view.
2. Right-click the item that you want to share, and then select **Share with**.

   The Share with Others dialog opens.

   > **Note:** If your sharing privilege does not allow you to open the Share with Others dialog, you can share or unshare your item by clicking the **Share** option. In this case, the item is shared with every user that has access to the workspace in which the item resides.

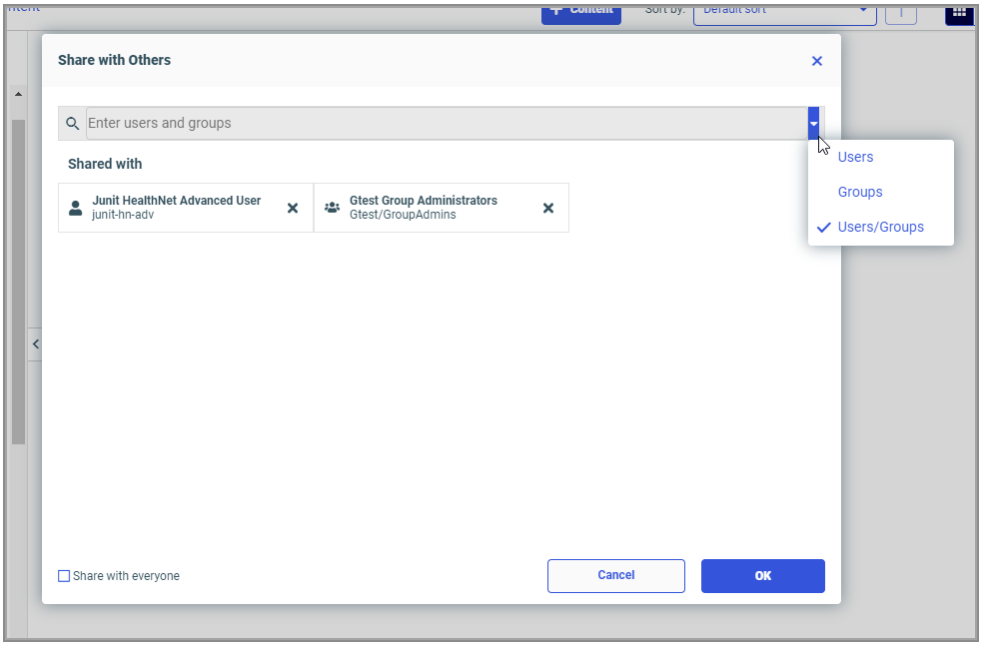
3. In the Search field, type the name of the user or group with which you want to share this item.
4. Click the correct entity from the dropdown list, as shown in the following image.



The name now displays below the Search field. The item is shared.

5. Optionally, add more users or groups.

   You can narrow your search by clicking an arrow and selecting **Users** or **Groups**, as shown in the following image.



> **Note:** You can also share the item with all users by selecting the **Share with everyone** checkbox.

6. Once you have selected your options, click **OK**.

   The icon now indicates that the item is shared. You can unshare it at any time or go back to the Share with Others dialog and edit your choices.

Customizing the Getting Started View

The Getting Started view in the Home area of the Hub is designed to help you with your initial interactions with WebFOCUS. This view corresponds with the workspace of the same name and contains educational resources and analytical content examples. You can use these materials to familiarize yourself with your environment and its main functions. Once you no longer need this information, you can customize the Getting Started view to display any other workspace in your repository.

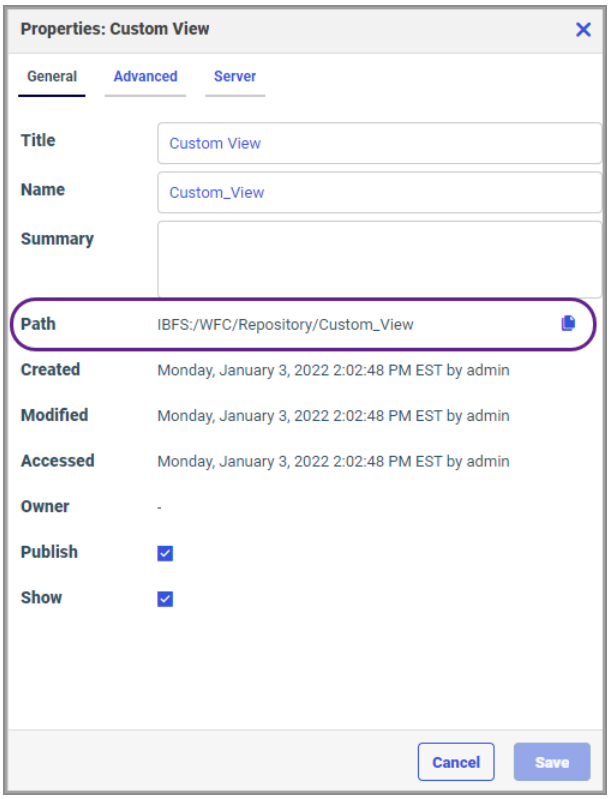
Customize the Getting Started View

Procedure

1. Sign in to WebFOCUS Hub as an administrator.
2. In the Workspaces area, create a new or select an existing workspace that you want to display in place of the Getting Started view in your Home area.
3. Populate your new workspace with the content of your choice.

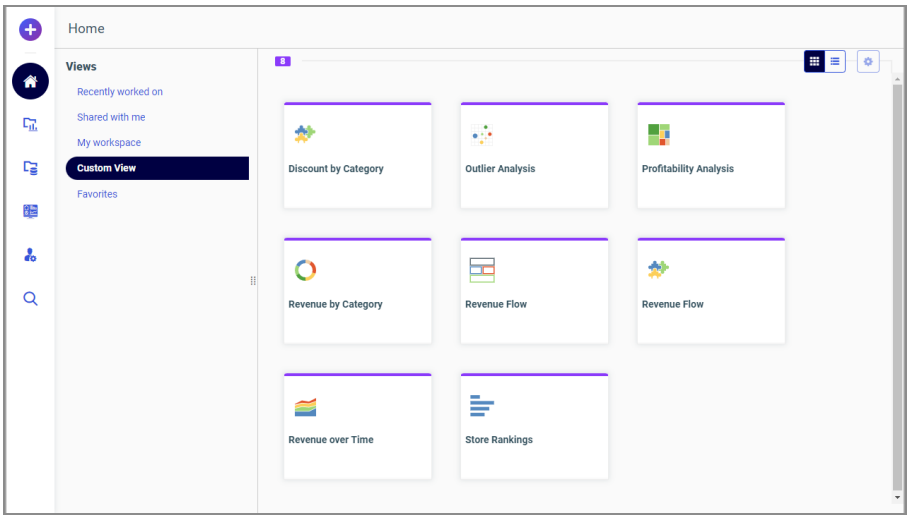
   > **Note:**
   > Keep in mind that folders do not display in the Home area view, so make sure to add your items on the workspace level.

4. Right-click your workspace, click **Properties**, and, on the Properties panel, copy the repository path, as shown in the following image.



5. In the Management Center area, in the Administration Console, navigate to **Application Settings**, and click **BI Portal**.
6. In the **Default List Repository Path** setting, replace the path with the one you copied, and click **Save**.
7. Refresh your browser window and navigate to the Home area.

   The workspace displays instead of the Getting Started view, as shown in the following image.



To revert back to the Getting Started view, insert the path to the Getting Started workspace in the **Default List Repository Path** setting.

Using Source Control Management with ibi WebFOCUS

You can apply source control management to files and folders in your WebFOCUS repository, enabling multiple users to make updates simultaneously without conflicts. When you apply the source control feature to a workspace and connect to a source control repository, such as GitHub, you can store, synch, and safely back up all changes made to your content in the workspace.

You can also add the corresponding WebFOCUS Reporting Server application directory to source control management along with the selected workspace by using this feature. It allows you to store, synch, and backup all changes made to your content in the workspace and the corresponding WebFOCUS Reporting Server application directory. For more information, see Add a Workspace and the Corresponding WebFOCUS Reporting Server Application Directory to Source Control Management.

Before you begin using source control management from the WebFOCUS repository, you must enable the option in the Administration Console. For more information, see the *ibi™ WebFOCUS® Security and Administration* technical content.

Source Control is a feature that provides many benefits to developers, including the following:

- A valuable feature for companies that need to audit changes made to their applications.
- A repository to store your source code, providing backup in a central location.
- A historical record of changes over time.
- Ability to review and compare changes.
- Ability to retrieve a specific version of a file.
- Ability to compare files between WebFOCUS and a Source Control repository.

Prerequisites for Source Control Management in ibi WebFOCUS

- WebFOCUS must be configured for source control management.
- You must enable an external source control management provider, such as GitHub.
- You must configure a connection for the Adapter for Git.
- Content must be published.
- Each workspace must have its own external repository.
- Source Control operations are not available for My Content files or Shared files.
- Schedules, alerts, and blogs cannot be added to source control management.

Add a Workspace and the Corresponding WebFOCUS Reporting Server Application Directory to Source Control Management

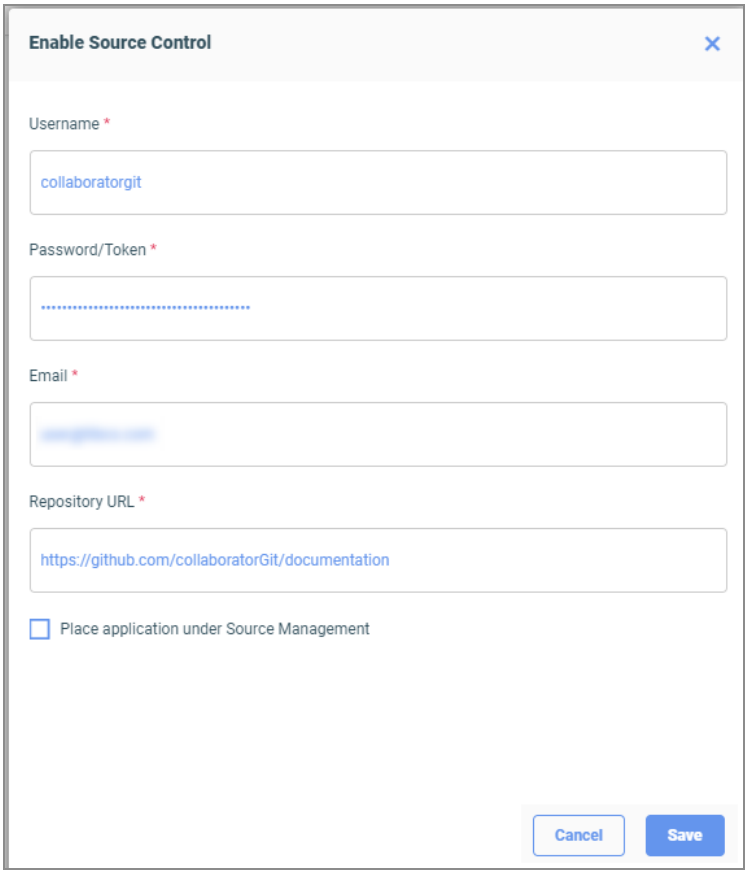
Procedure

1. Sign in to WebFOCUS as a developer or administrator.
2. To add a workspace and corresponding application directory to source control, right-click a workspace that you want to add to Source Control, point to **Git / Source Control**, and then click **Place under Source Management**.

The Enable Source Control dialog opens.

3. Enter the login information for your external git source control repository and provide a repository URL.

   The following image shows an example of the Enable Source Control dialog populated with the GitHub repository information.

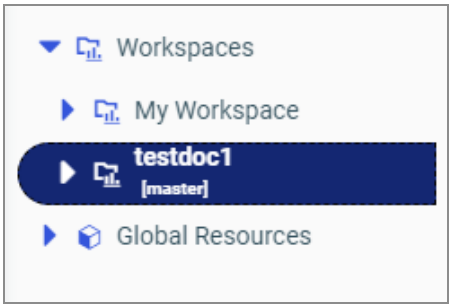


   To add the corresponding WebFOCUS Reporting Server application directory to the source control management, select the **Place application under Source Management** checkbox.

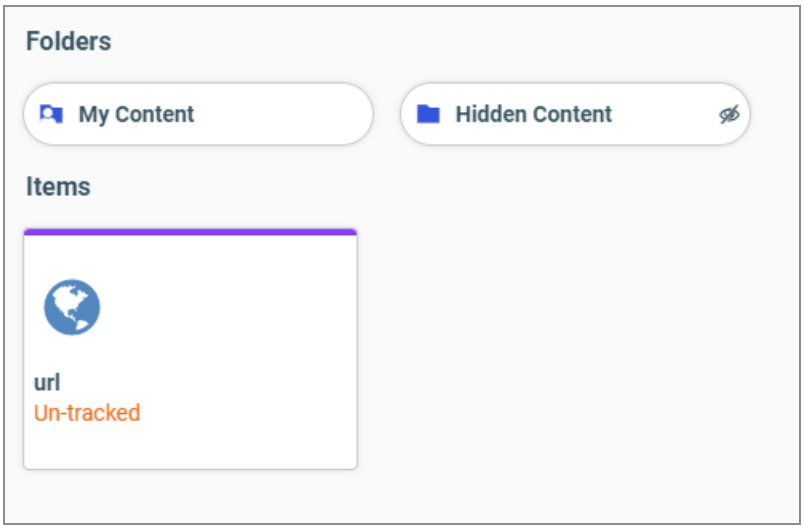
   > **Note:** If the **Place application under Source Management** checkbox is not selected then only the selected workspace is added to the source control management.

4. Click **Save**.

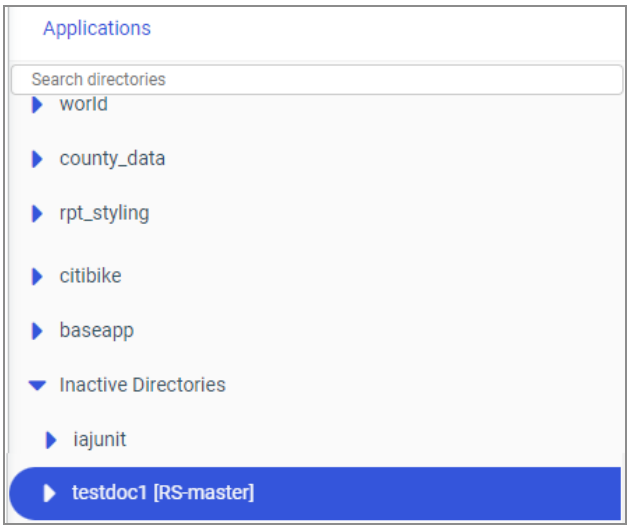
The workspace title in the Resources tree changes to show the branch that is currently enabled in the remote repository, as shown in the following image.



The items in the workspace show the Un-tracked label, as shown in the following image, indicating that the source control management is enabled but the content is not yet synchronized with the remote repository.



On the Application Directories page, the corresponding WebFOCUS Reporting Server application tile in the Applications tree changes to show the branch that is currently enabled in the remote repository, as shown in the following image.



5. To remove the workspace and the corresponding WebFOCUS Reporting Server application directory from source control, right-click the workspace, point to **Git / Source Control**, and then click **Remove From Source Management**.

   All subsequent changes to this workspace and the corresponding WebFOCUS Reporting Server application can no longer be committed to the remote repository.

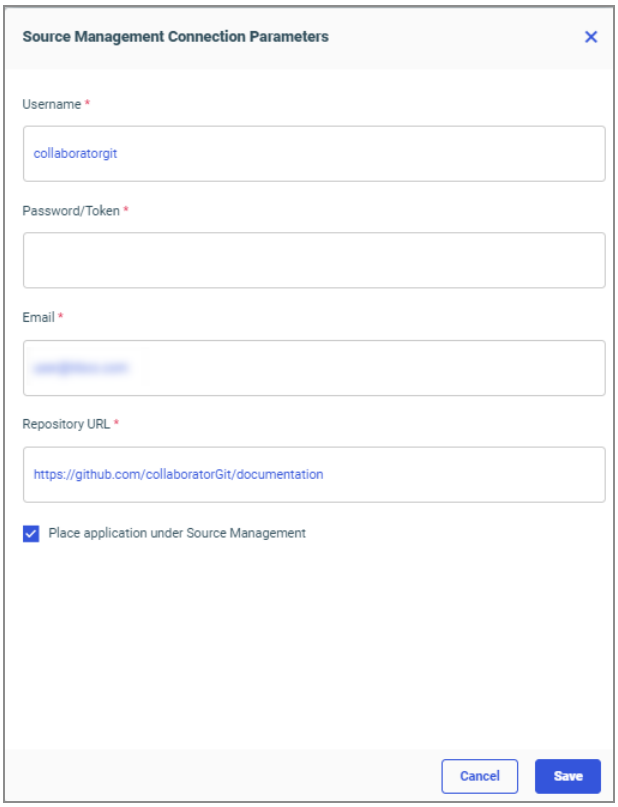
Update the Connection Parameters

Procedure

1. To update the external git source control repository connection parameters, right-click the workspace, point to **Git / Source Control**, and then click **Update Connection Parameters**.

   The Source Management Connection Parameters dialog opens.

2. Update the login information for your external git source control repository, and then click **Save**, as shown in the following image.



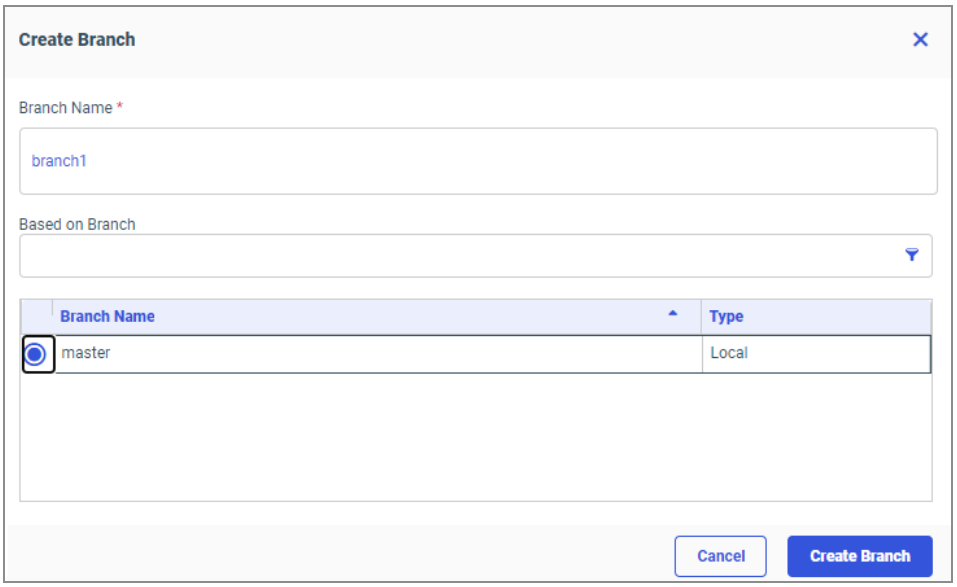
Create a New Source Control Management Branch

Procedure

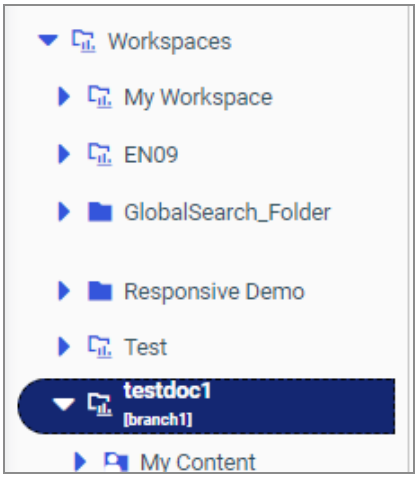
1. Right-click the workspace that you just put under the Source Management, point to **Git / Source Control**, and then click **Create Branch**.

   The Create Branch dialog opens.

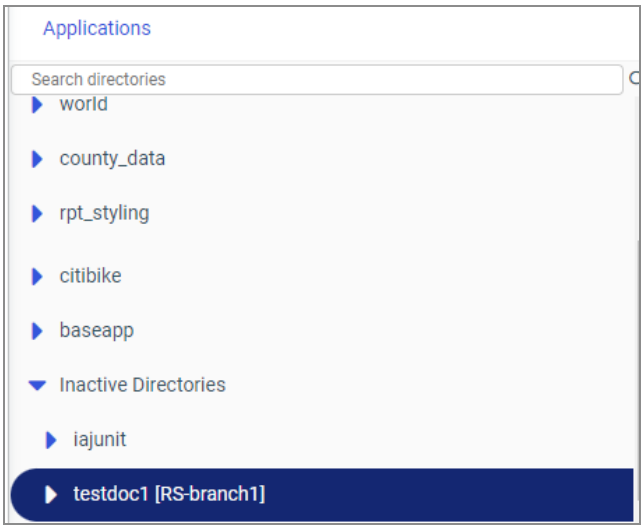
2. Enter the Branch name, select the branch type, and click **Create Branch**, as shown in the following image.



The name of your new branch is now displayed next to the name of the workspace in the Resources tree, as shown in the following image.



You can also see the name of your new branch in the Applications tree on the Application Directories page, as shown in the following image.



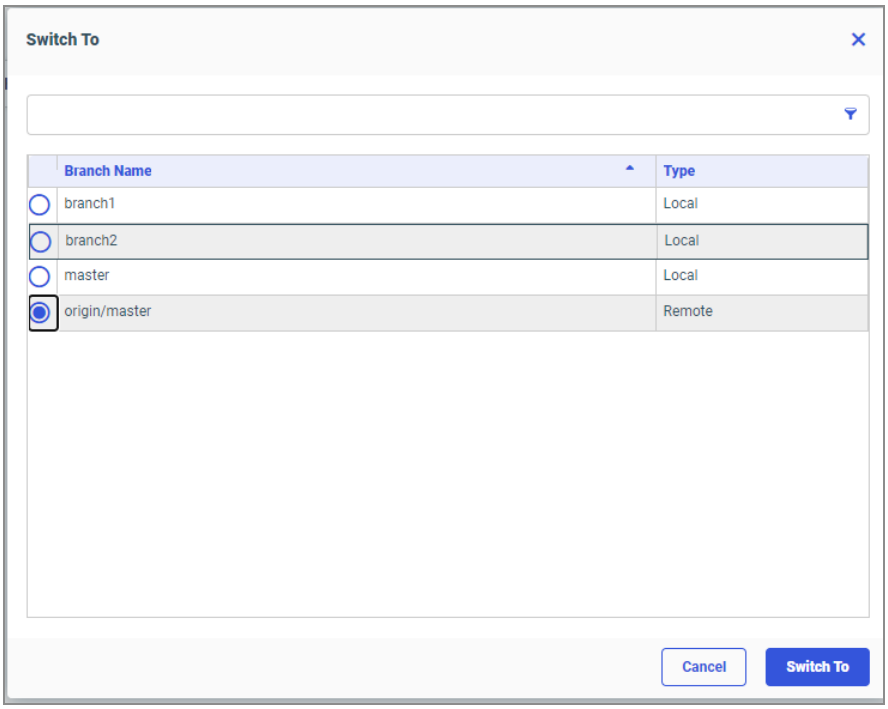
Switch the Branches

Procedure

1. To switch the branches in the source control repository, right-click the workspace, point to **Git / Source Control**, and then click **Switch to Branch**.

   The Switch To dialog opens. Here you can see all the branches that are associated with your source control repository.

2. Select a branch from the list and click **Switch To**, as shown in the following image.



Note: If your list is long, you can use the search field to look for a specific branch.

The name of your new branch is displayed next to the name of the workspace in the Resources tree.

You can also see the new branch next to the name of the corresponding WebFOCUS Reporting Server application directory in the Applications tree.

3. You can also switch to the master or main branch. Right-click the workspace, point to **Git / Source Control**, and then click **Switch to Master/Main Branch**.

   The name of the branch is displayed as master next to the name of the workspace in the Resources tree.

   You can also see the new branch next to the name of the corresponding WebFOCUS Reporting Server application directory in the Applications tree.

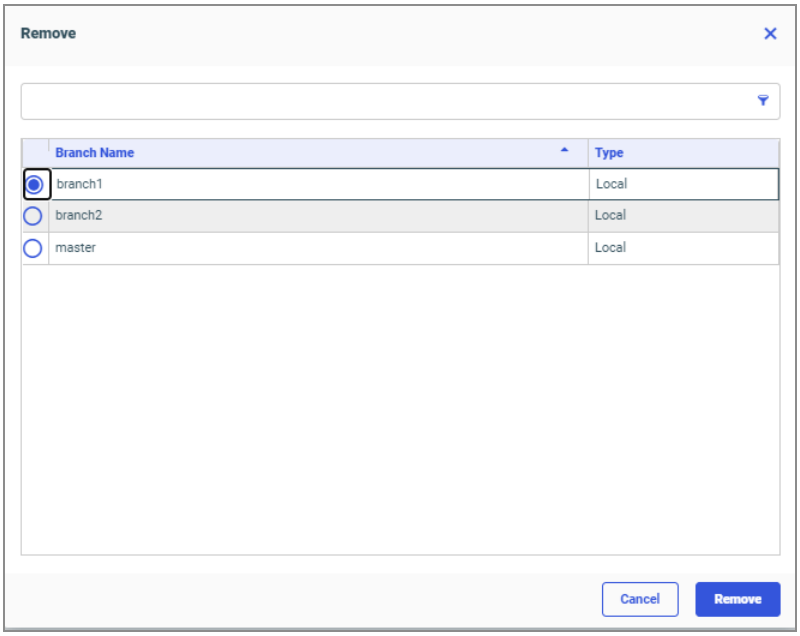
Remove a Branch

Procedure

1. To remove a branch from the WebFOCUS repository, right-click the workspace, point to **Git / Source Control**, and then click **Remove Branch**.

   The Remove dialog opens. Here you can see all the branches that are associated with your source control repository.

2. Select a branch from the list and click **Remove**, as shown in the following image.



> **Note:** If your list is long, you can use the search field to look for a specific branch.

The selected branch is removed from the WebFOCUS repository.

Create a Commit and Push Request

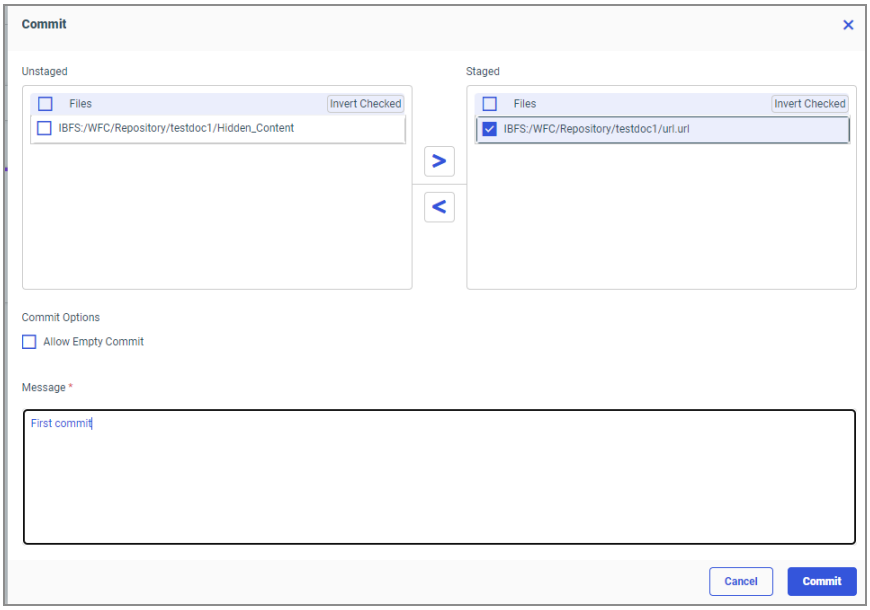
Procedure

1. Right-click the workspace, point to **Git / Source Control**, and then click **Commit & Push**.

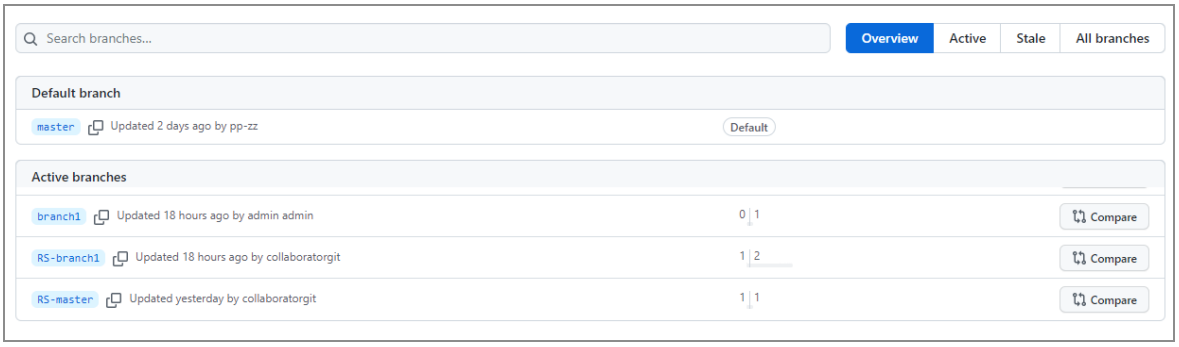
   The Commit dialog opens.

2. In the Unstaged pane, select the files that you want to link with your Source Control repository, and use arrows to move them to the Staged pane.

3. Fill out the Message field, giving a brief description of this data transfer event, and then click **Commit**, as shown in the following image.



The items in your workspace are now synced with your remote repository. Additionally, all the items in the corresponding Reporting server application directory are synced with your remote repository. Two separate branches are created in the remote repository for the content from your workspace and the corresponding WebFOCUS Reporting Server application directory, as shown in the following image.



Note: You can commit only the changes from the WebFOCUS Reporting Server application directory without selecting the content from the workspace to commit. Select the **Allow Empty Commit** checkbox and then click **Commit**.

All the changes from the WebFOCUS Reporting Server application directory are synced with your remote repository.

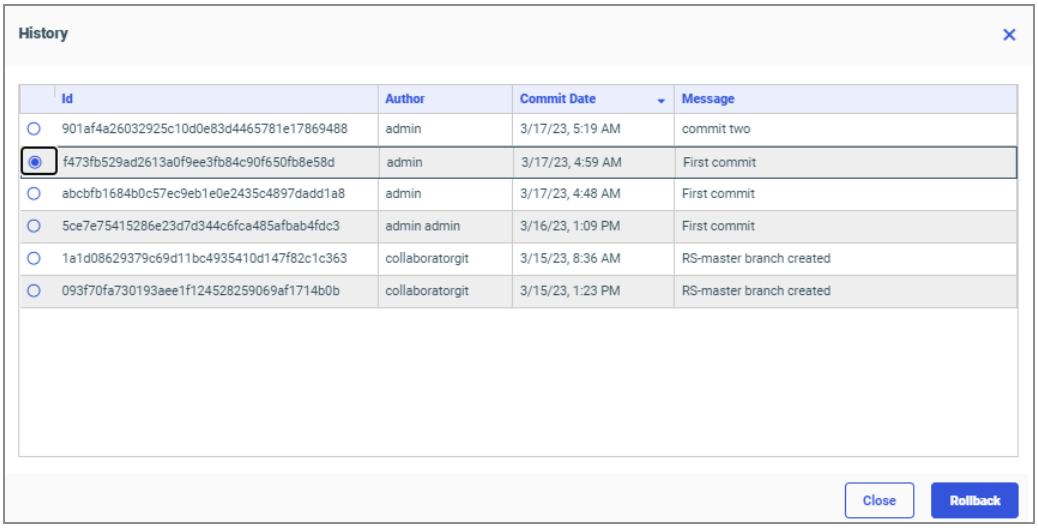
View the Source Control History and Rollback Commits

Procedure

1. To view the history and restore the previously committed versions of the content from workspace and corresponding WebFOCUS Reporting Server application directory, right-click the workspace, point to **Git / Source Control**, and then click **History & Rollback**.

   The History dialog opens. Here you can see the basic information about the commits this workspace underwent, including the branch Id, the committing user, commit dates, and messages.

2. Select the Id to which you want to rollback, and then click **Rollback**, as shown in the following image.



   The Id of your new branch is displayed next to the name of the workspace in the Resources tree.

   You can also see the Id of a new branch next to the name of the corresponding WebFOCUS Reporting Server application directory in the Applications tree.

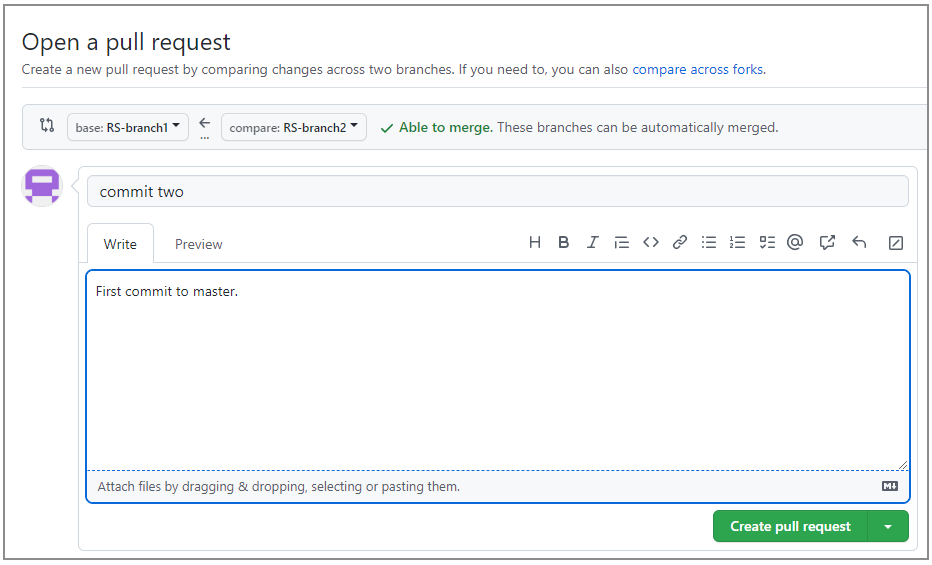
Create a Pull Request

Once all your changes are final, you can bring your content to the master branch.

Procedure

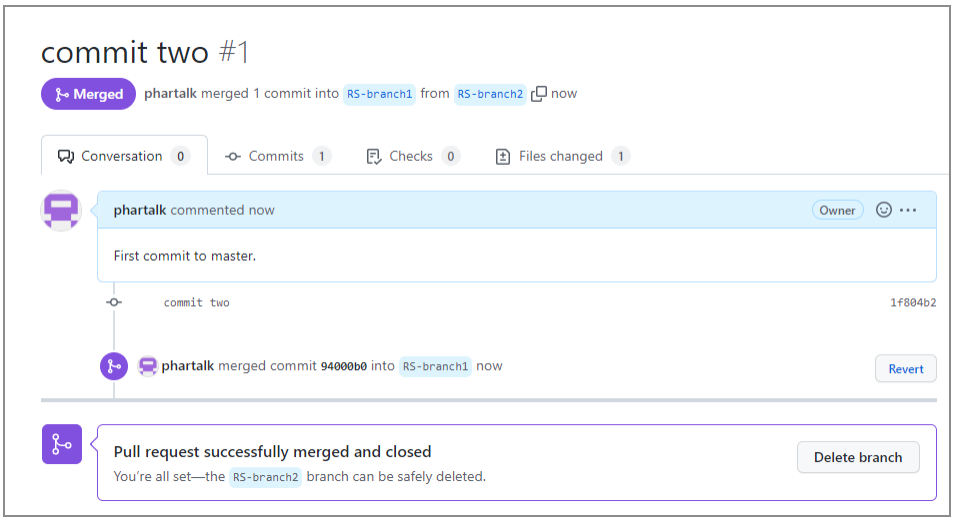
1. Right-click the Workspace, point to **Git / Source Control**, and then click **Create Pull Request**.

   You are redirected to the remote repository, where you are prompted to create a pull request. The following image shows an example of the pull request in the GitHub remote repository.



2. Create a pull request and merge your changes with the master branch.

   A confirmation displays informing you that the merge was successful, as shown in the following image.



3. Optionally, delete the remote branch.

   You successfully added your workspace and its content to Source Control.

> **Note:** When several users work on the same files and commit their changes to the same remote repository, use the Commit to WebFOCUS option to sync all committed changes to your environment. If there are uncommitted changes, a warning displays when you click **Commit to WebFOCUS**.

Using the Command Editor for Source Control Management

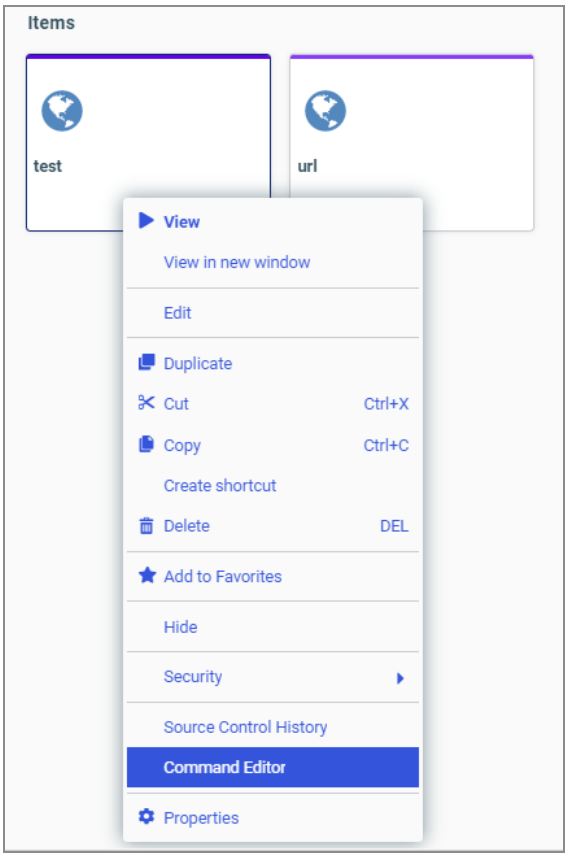
The Command Editor is designed to execute individual GIT commands in a simple and intuitive tool. This capability allows you to perform GIT commands on workspaces as well as individual items. It is also useful for resolving errors that require executing GIT commands that the basic Source Control Management interface does not provide.

Use the Command Editor

Procedure

1. Right-click an item inside the workspace that is placed under the Source Control

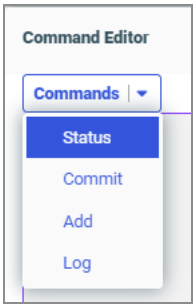
Management, and then click **Command Editor**, as shown in the following image.



Note: To use the Command Editor on a workspace level, right-click the workspace that was placed under source control, point to **Git / Source Control**, and then click **Command Editor**.

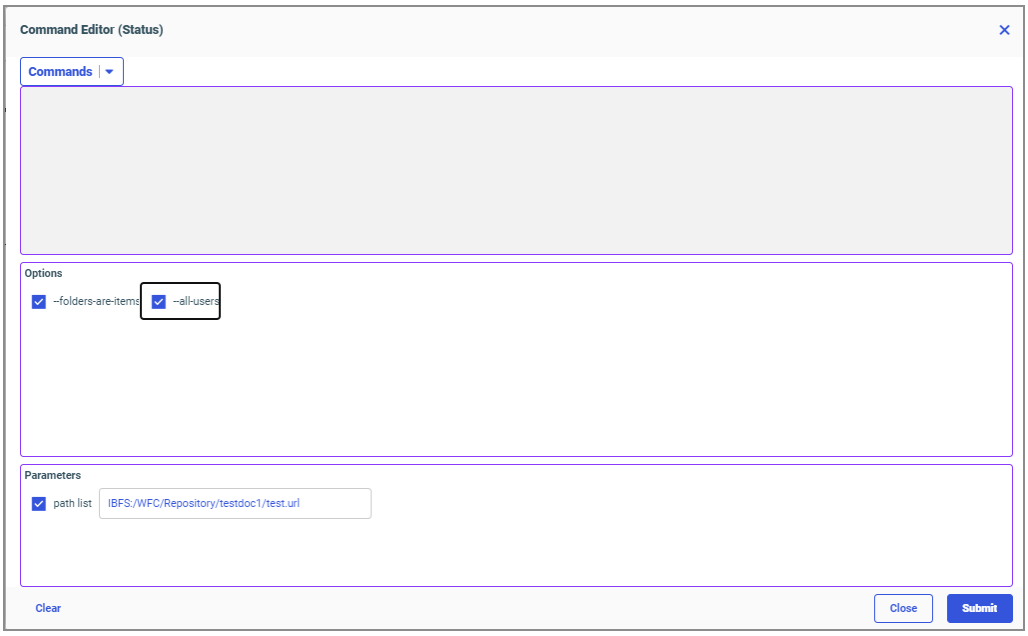
The Command Editor dialog opens.

2. From the Commands dropdown list, select **Status**, as shown in the following image.

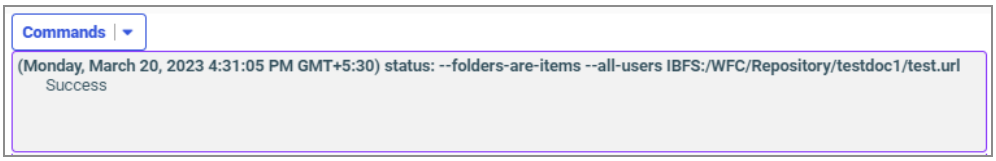


The Status command options and the item path is displayed.

3. Select the options and click **Submit**, as shown in the following image.

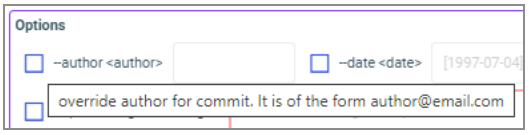


The status of the item displays in the upper pane of the Command Editor, as shown in the following image.



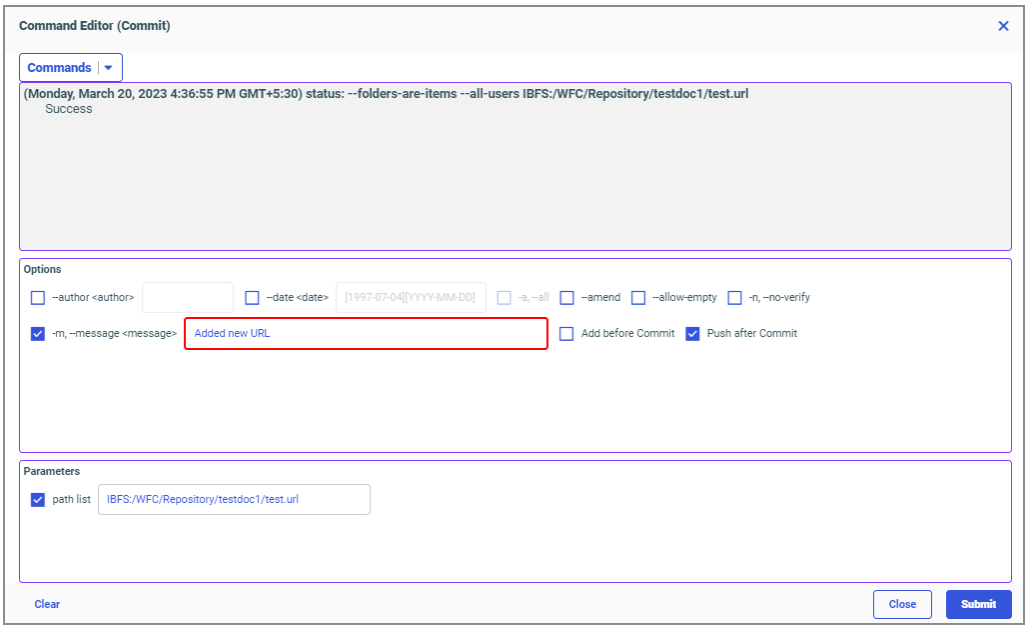
4. To commit this item to a remote repository, select **Commit** from the Commands dropdown list.
5. Select the appropriate options and click **Submit**.

   If you are unsure which options to choose, hover your cursor over an option checkbox and view the tooltip, as shown in the following image.



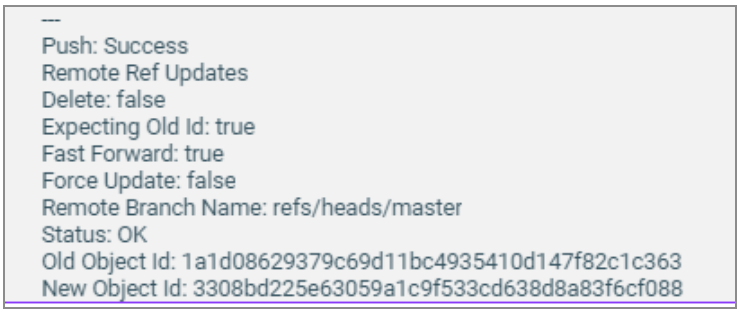
In this example we selected **message** and **Push after Commit**, as shown in the

following image.



The item is committed to the remote repository.

6. Once the command result displays in the upper pane of the Command Editor, scroll down to view the status of your commit, as shown in the following image.



Your commit is successful.

7. Click **Close** to exit the Command Editor.

Understanding GIT Commands

When you open the Command Editor for a workspace or an item, different sets of commands display, depending on the level.

The following commands are available in the Command Editor:

- **Status.** Provides a visual representation of the state of your item in relation to your remote repository and its conditions.
- **Commit.** Performs a commit request for an individual item, which allows you to synchronize your untracked edits with a remote repository.
- **Pull.** Performs the task of fetching in changes and merging them.
- **Push.** Sends your committed changes to a remote repository.
- **Init.** Initializes a new, empty repository.
- **Clone.** Creates a copy of a repository locally instead of the remote repository server.

  > **Note:** The repository you cloned is still connected to the remote version so that you can push your local changes to the remote repository to keep them synced when you are online.

- **Remote.** Helps you to manage connections to remote repositories. It allows you to show which remote repositories are currently connected, but also to add new connections or remove existing ones.
- **Branch.** Lets you create, list, rename, and delete branches.
- **Merge.** Takes the independent lines of development created by one branch and applies them into another branch.

  > **Note:** If there are no conflicting changes, merge can be done as a pull request through the web interface of your repository provider. Alternatively, it can be done by using the command line.

- **Fetch.** Downloads commits, files, and references from a remote repository into your local repository.
- **Log.** Shows the file or files that have been modified, the number of lines that have been added or removed and also displays a summary line of the total number of files changed and the lines that have been added or removed.
- **Reset.** Serves to undo local changes to the state of a Git repository.
- **Checkout.** Lets you navigate between the branches created in the repository. When you use this command to check out a branch, the command updates the files in the working directory to match the version stored in that branch, and it tells Git to

record all new commits on that branch.

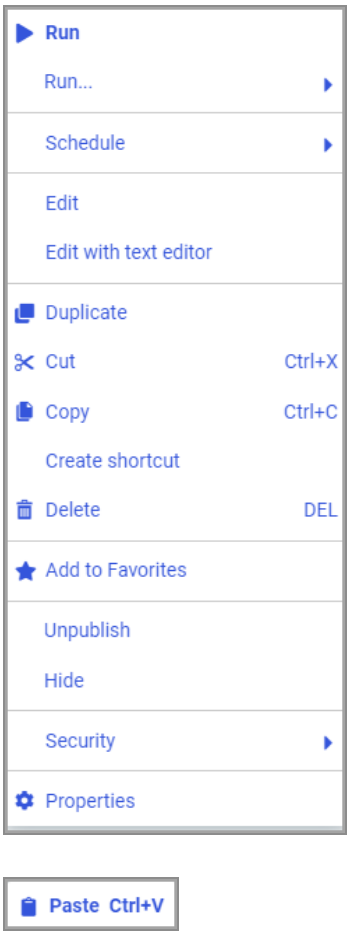
To learn more about GIT commands and their options, consult the GIT documentation from your remote repository provider.

Using Keyboard Shortcuts

You can use keyboard shortcuts to perform the common actions shown in the following table.

Action	Shortcut Keys
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	DEL

The relevant shortcut keys display next to their corresponding options in the shortcut menu, as shown in the following images.



Editing Source Code Files

The Editor enables you to create, view, and edit the source code for WebFOCUS procedures (FOCEXECs), Master, HTML, JavaScript, WebFOCUS StyleSheet, Cascading Style Sheet, Text, SQL, R, and Python files.

Additionally, the Editor supports user-friendly features, such as syntax highlighting, code folding, line numbering, autocomplete, and display of a status bar and indent guides. These features speed productivity by enabling better clarity in helping you understand, debug, and work with your source code.

The Editor offers the ability to run WebFOCUS procedures (FOCEXECs) or HTML pages directly from the Editor. You can also save the source code with a different name.

Note: If you create a chart or report in WebFOCUS Designer, you can edit it in the Editor, save it, and open it again in WebFOCUS Designer. Be aware, however, that if your changes are not compatible with WebFOCUS Designer, they may be reverted or cause issues on loading. In such cases, it is recommended to edit the item using only the Editor from that point forward.

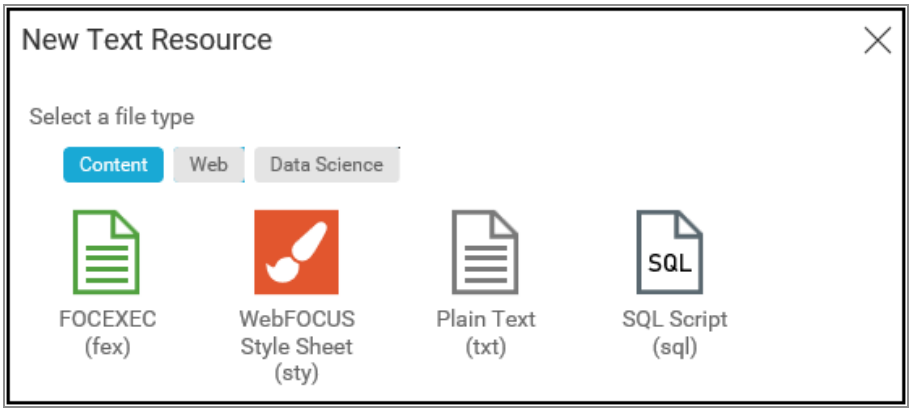
Accessing the Editor

You can open the Editor in one of the following ways:

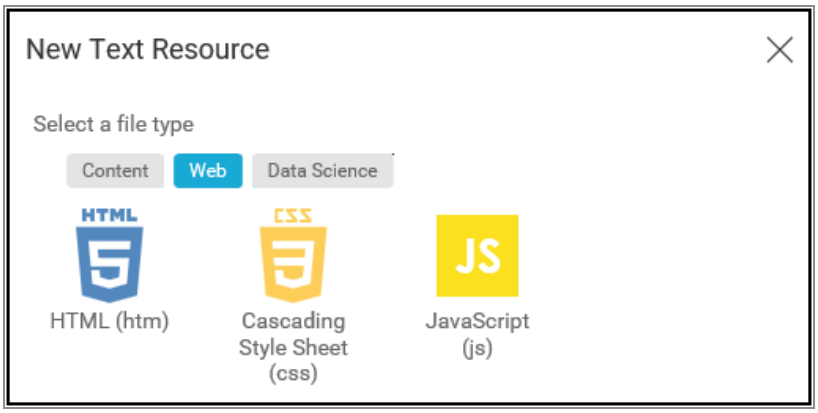
If you are creating a new file, you are prompted to select a file type in the New Text Resource pane. File types are grouped into the following three categories:

- Content
- Web
- Data Science

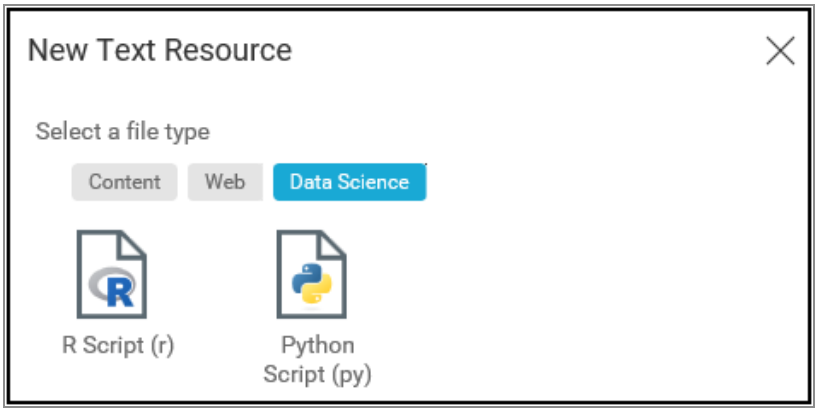
From the Content category, you can choose FOCEXEC (fex), WebFOCUS Style Sheet (sty), Plain Text (txt), or SQL Script (SQL), as shown in the following image.



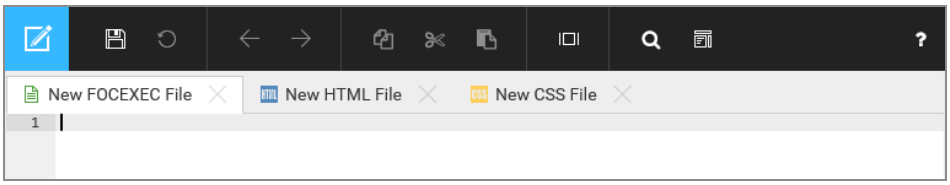
From the Web category, you can choose HTML (htm), Cascading Style Sheet (css), or JavaScript (js), as shown in the following image.



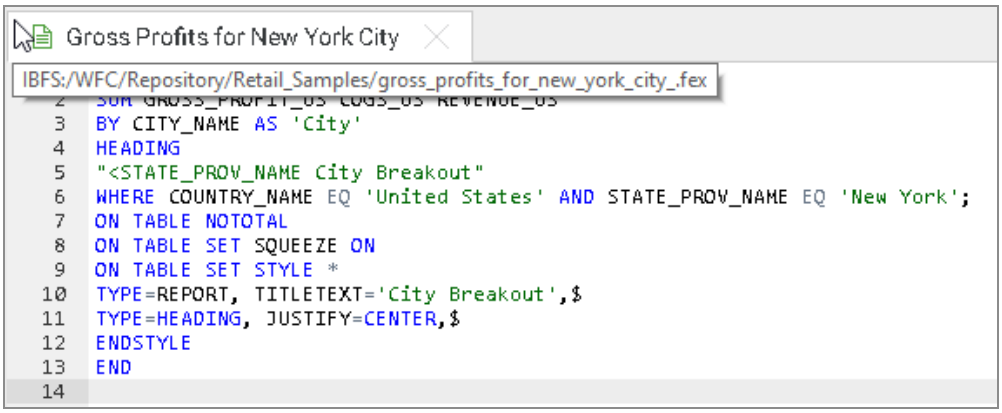
From the Data Science category, you can choose R Script (r) or Python Script (py), as shown in the following image.



Once you choose a file type, the prompt closes and the Editor open in a new browser tab or window, depending on your browser setting. Default file names begin with the word New, followed by the type of file, for example, New FOCEXEC File, New HTML File, and so on. Small glyphs consistent with the file type appear on the left side of the tab to help identify the type of file, as shown in the following image.

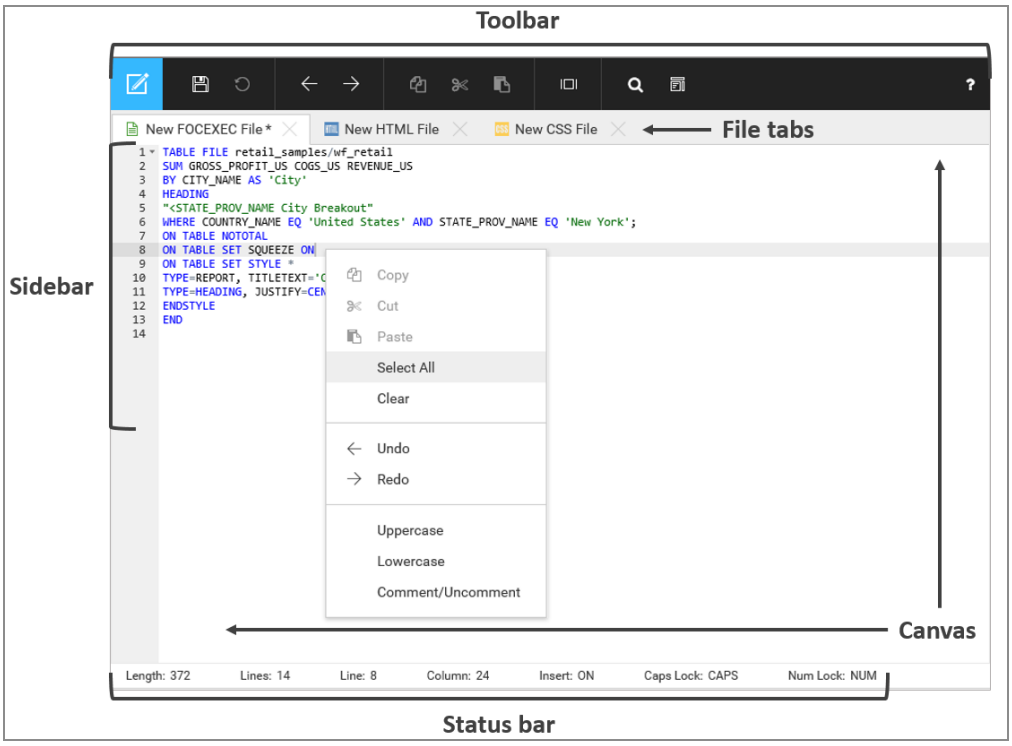


If you hover the mouse over a Title in a tab, the full path to the location of the file displays, as shown in the following image. This path is helpful in differentiating files of the same name and type, in different locations.



Navigating the Editor Interface

The main components of the Editor interface are shown in the following annotated image.



The Editor interface components are identified as follows:

- **Toolbar.** Contains common file tasks, such as Open, Close, Save, and Save As, as well as preferences, such as line numbering, code folding, autocomplete, status bar, and indent guides.
- **File Tabs.** When multiple tabs are open, clicking a file tab lets you select the file that

you want to edit. You can close a tab by clicking the *X* to the right of the file name in the tab. There is an asterisk (*) next to the file name to indicate that changes have not been saved in the file. If you choose to save a file, the standard Save, or Save As for new files, logic is used. Closing the last open tab exits the Editor. There is no limit to the number of tabs that can be opened. If many files are being edited, and they overflow the boundaries of the screen, you can use the left (<) and right (>) arrows to display the hidden tabs.

- **Sidebar.** Displays line numbers and code folding controls, if these are on. If there is syntax validation, the Editor sidebar displays syntax error markers.
- **Canvas.** The canvas is the main editing area. This is where you type code and see your enabled preferences. In addition to using the toolbar to select your task, you can also use right-click menus on the canvas to select tasks.
- **Status Bar.** Displays contextual information about the file being edited, such as length in characters of the text, total number of lines, line number where the cursor is positioned, column number where the cursor is positioned, and keyboard input modes, such as Insert, Caps Lock, and Num Lock.

Using the Editor Toolbar

The Editor toolbar presents commonly used functions, organized into a series of menu groups. The toolbar is shown in the following image.

The following table lists and describes the functions that you can access from the Editor toolbar.

Icon	Description
	Editor Application menu. Opens a menu of file-related commands.
	Save. Opens the Save As dialog, where you can save a new file.
	Reset. Reverts the contents of a tab to its last saved state.

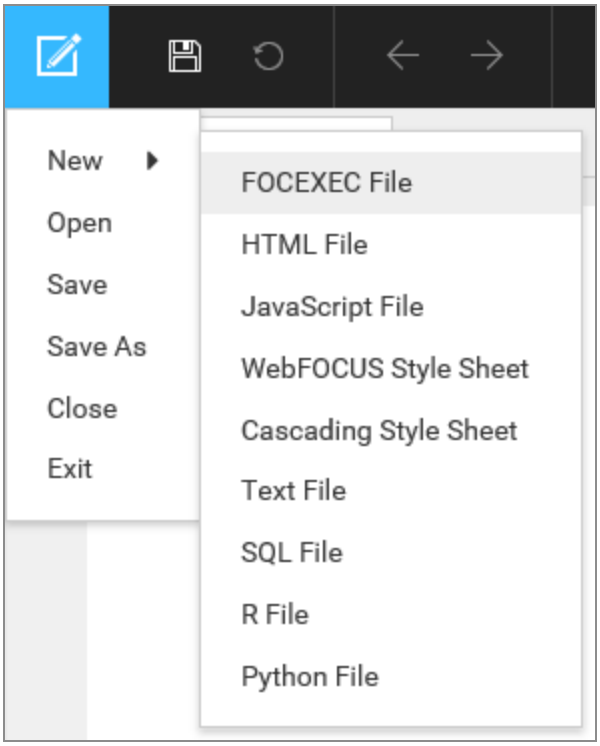
Icon	Description
	Undo. Reverses the last action, such as typing, pasting, or deleting text.
	Redo. Restores a previously undone action.
	Copy. Copies your selection to the clipboard.
	Cut. Deletes your selection and places it on the clipboard.
	Paste. Pastes your selection from the clipboard to the location indicated by the cursor.
	Preview. Runs and displays the output of a report or HTML page.
	Search. Opens the Search and Replace pane, where you can search for and replace text in a file.
	Help. Opens the Help system, which provides documentation on the Editor interface.

Editor Application Menu

The Editor Application menu opens a menu of file-related commands, as shown in the following image. The Editor icon is always active and is located in the upper-left corner of the Editor interface.

Editor options include:

- **New.** Displays a submenu of all file types that you can create in the Editor. You can create FOCEXEC, HTML, JavaScript, WebFOCUS StyleSheet, Cascading Style Sheet, Text, SQL, R, and Python files, as shown in the following image.



- **Open.** Opens an existing file.

> **Note:** You can open supported file types from the default WebFOCUS Reporting Server or WebFOCUS Repository.

- **Save.** Saves the active file.
- **Save As.** Saves the active file, in one of several file types, with a new file name.
- **Close.** Closes the active file.
- **Exit.** Closes the active file and exits the Editor.

Edit Group

The Edit group on the toolbar is shown in the following image.

From the Edit group, you can perform the following actions:

- **Save.** Saves the active file.
- **Reset.** Reverts the contents of a tab to its last saved state. Clicking Reset displays a dialog, warning that unsaved changes is lost. Clicking **OK** on the dialog confirms that the reset action and unsaved changes are not applied. Clicking **Cancel** returns you to the page where recent changes are still available. The Reset option is not available when an existing file is unchanged or a new file has not been saved.
- **Undo.** Reverses the last action, such as typing, pasting, or deleting text. You can also press Ctrl+Z to undo the last action. If there are no changes to a page, the Undo option is not active. To undo multiple actions, including actions that have been saved, you can click the **Undo** option or press Ctrl+Z repeatedly.
- **Redo.** Restores a previously undone action. You can also press Ctrl+Y to restore a previously undone action. If the Redo option does not apply, the option is not active. To redo multiple actions, including actions that have been saved, you can click the **Redo** option or press Ctrl+Y repeatedly.
- **Copy.** Copies your selection to the clipboard. You can also press Ctrl+C to copy text.
- **Cut.** Deletes your selection and places it on the clipboard. You can also press Ctrl+X to delete text.

- **Paste.** Pastes your selection from the clipboard to the location indicated by the cursor. You can also press Ctrl+V to paste text.

Preview Group

The Preview group on the toolbar is shown in the following image.

Clicking the **Preview** button runs and displays the output of a report or HTML page. This option is only available for FOCEXEC files and HTML pages.

Search Group

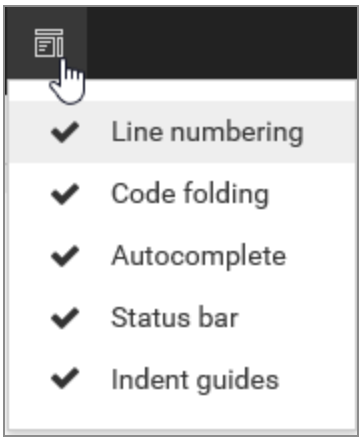
The Search group on the toolbar is shown in the following image.

Clicking the **Search** button opens the Search and Replace dialog, where you can search for and replace text in the file you are currently editing.

Options Group

The Options group on the toolbar is shown in the following image.

Clicking the **Options** button displays a submenu of preferences, which enable you to manage your code. Options include line numbering, code folding, autocomplete, status bar, and indent guides, as shown in the following image. You can selectively turn these features off or on in a file.



Help Group

The Help group on the toolbar is shown in the following image.

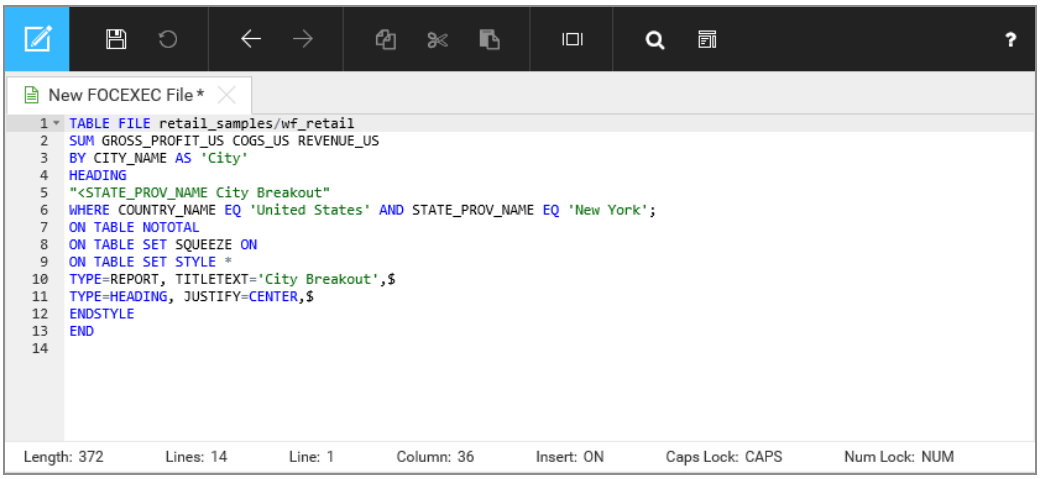
Clicking the **Help** button opens the Help system, which provides documentation on the Editor interface.

Syntax Highlighting

Syntax highlighting improves readability and makes debugging procedures easier. This color-coded highlighting is applied to the source code for WebFOCUS procedures to distinguish keywords, comments, functions, arithmetic and logical operators, constants, and quoted strings.

Highlighting is supported for HTML, JavaScript, CSS, R, Python, and SQL files.

The following image is an example of highlighting in a WebFOCUS procedure (FOCEXEC) that is opened in the Editor.



Saving Files

You can save a file in the Editor in one of the following ways:

- Click the **Save** button on the toolbar.
- Select **Save** or **Save As** from the Application menu.

Save a Procedure File

Procedure

1. Create a procedure (FOCEXEC) in the Editor.

   The default file name is New FOCEXEC File *. Since the file has not been saved, an asterisk (*) appears to the right of the file name. When the file is saved, the asterisk is removed.

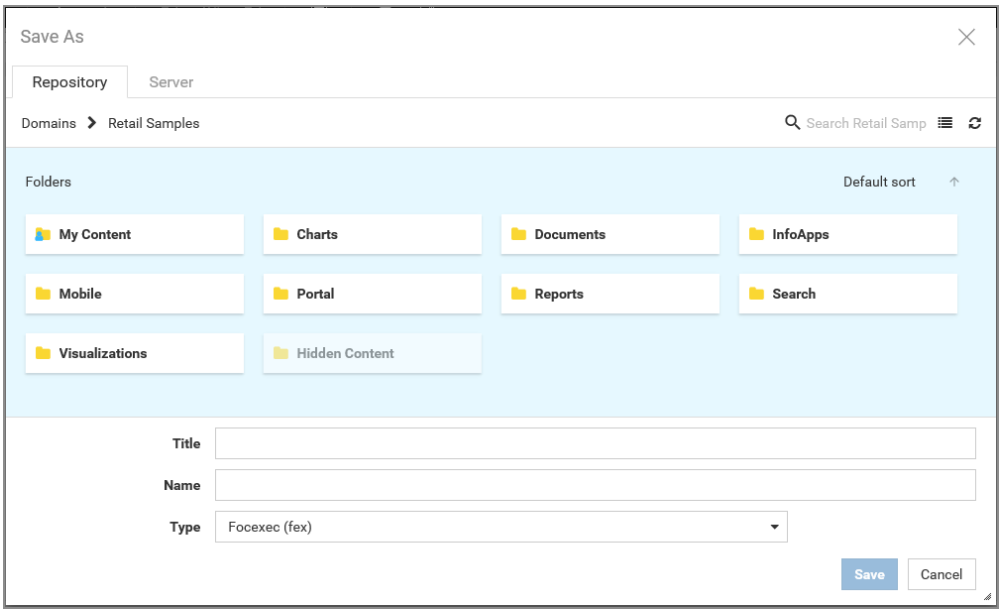
2. Click the **Save** button on the toolbar or select **Save** from the Editor Application menu.

   The Save As dialog opens.

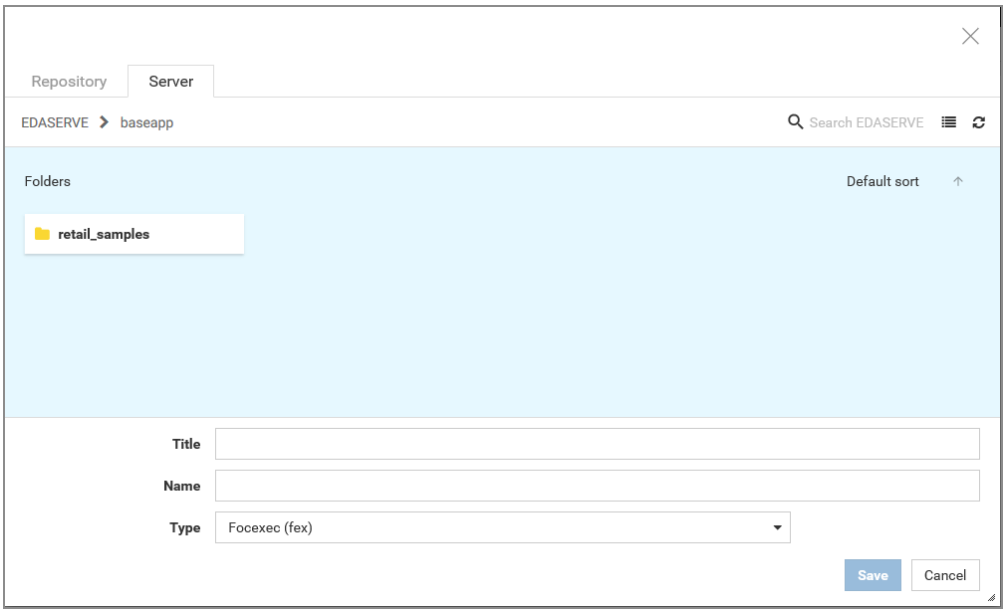
3. On the Save As dialog, navigate to the WebFOCUS Repository or WebFOCUS Reporting Server where you want to the save the file.

   - Select the **Repository** tab to navigate to an available domain for saving the file,

as shown in the following image.



- Select the **Server** tab to choose a WebFOCUS Reporting Server application directory for saving the file, as shown in the following image.



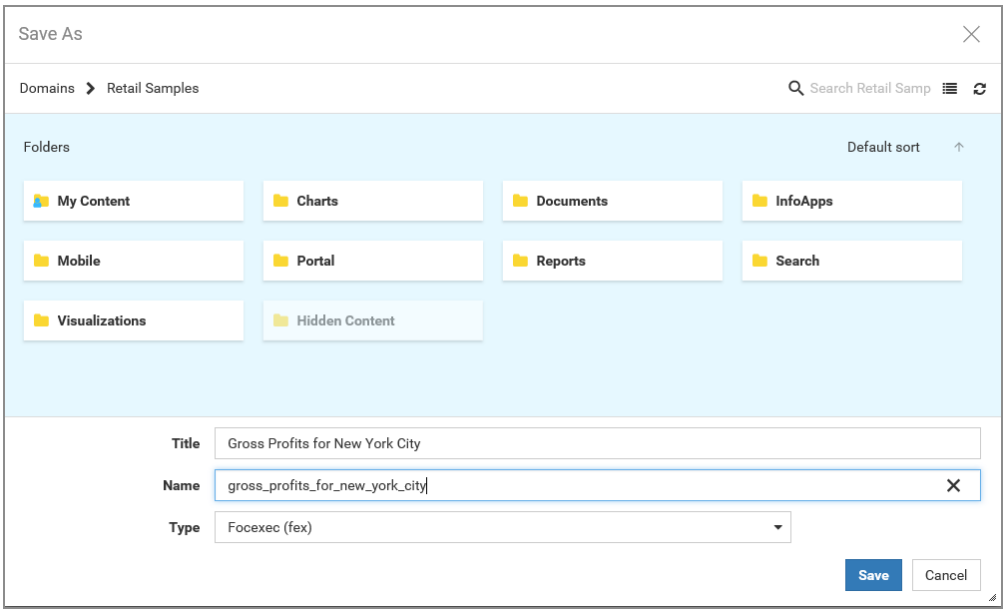
Note:

- If you are accessing a WebFOCUS Reporting Server configured as the default or a server assigned to the domain that requires credentials, you are prompted for credentials when you:
  - Run an open file that has not been saved.
  - Save a file to the WebFOCUS Reporting Server.
- You can save supported file types to the default WebFOCUS Reporting Server or WebFOCUS Repository.
- You can open supported file types from the default WebFOCUS Reporting Server or WebFOCUS Repository.

4. In the Title input box, type a title, which is the display name for the file. By default, the Name value is the Title value in all lowercase letters and underscores (_), instead of spaces. The Name value is processed by the WebFOCUS Reporting Server.
5. From the Type dropdown list, select a file type. Supported file types are FOCEXEC, WebFOCUS StyleSheet, Cascading Style Sheet, HTML, SQL, JavaScript, Text, R, Python, and Properties.

   Note: You can save a plain text file as a Properties file from the Save As dialog. This file type is not available from the New file submenu.

   The following image shows a Save As dialog with the location of the file, Title and Name values, and FOCEXEC selected as the file type.

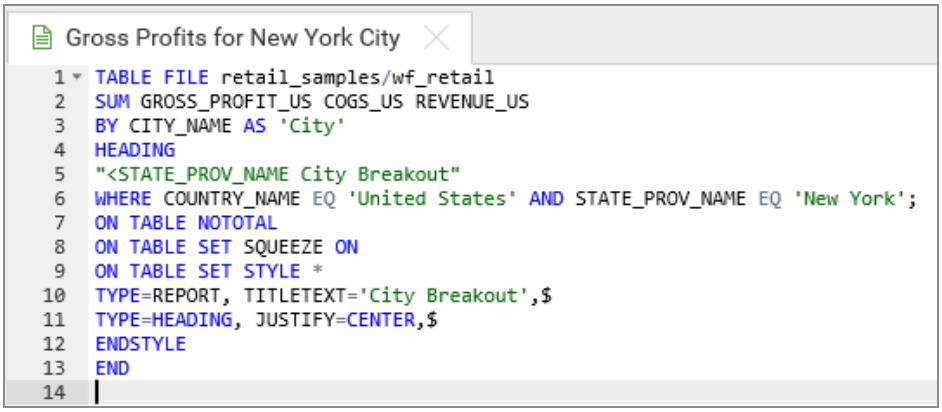


The Save As dialog also contains the following:

- Search option to search the list of available files.
- View button to change from Tile view to List view. You can customize the columns displayed in the Tile or List view. Available columns are Title, Name, Summary, Last modified, Created on, Size, and Owner.
- Refresh option to refresh the display of the window.

6. Click **Save**.

   When the file is saved, the Title displays on the tab and the asterisk (*) is removed, as shown in the following image.

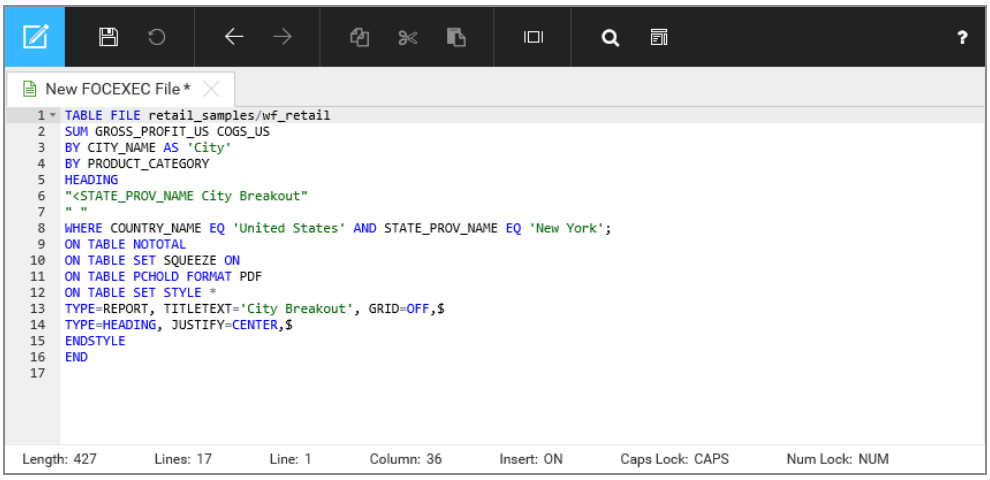


Note: The Save icon and the Save option on the File menu are no longer active.

Previewing Output

The Preview option on the Editor toolbar lets you run and display a preview of your report or HTML page. This option is only available for FOCEXEC files and HTML pages.

To run and preview the output of a procedure in the Editor, click the Preview button on the toolbar.



The procedure runs and the output displays, as shown in the following image.

PAGE 1

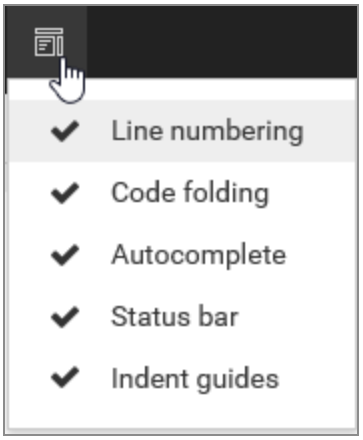
New York City Breakout

City	Product Category	Gross Profit	Cost of Goods
Adams	Accessories	$1,173.16	$2,518.00
	Camcorder	$2,092.79	$6,478.00
	Computers	$560.95	$995.00
	Media Player	$710.92	$1,782.00
	Stereo Systems	$1,927.47	$5,020.00
	Televisions	$585.33	$3,757.00
Addison	Accessories	$363.78	$1,086.00
	Camcorder	$2,715.15	$6,555.00
	Computers	$924.92	$1,957.00
	Media Player	$1,016.88	$2,893.00
	Stereo Systems	$1,396.15	$3,399.00
	Televisions	$1,314.47	$4,260.00
	Video Production	$109.00	$190.00
Afton	Accessories	$597.11	$1,230.00
	Camcorder	$668.93	$1,337.00
	Computers	$420.46	$870.00
	Media Player	$1,304.32	$5,512.00
	Stereo Systems	$940.67	$2,021.00
	Televisions	$212.99	$587.00
	Video Production	$337.08	$1,460.00
Akron	Accessories	$804.96	$2,083.00
	Camcorder	$335.15	$665.00
	Computers	$242.98	$329.00
	Media Player	$1,174.87	$4,207.00
	Stereo Systems	$2,640.07	$5,337.00
	Televisions	$209.98	$640.00
	Video Production	$330.00	$468.00
Albany	Accessories	$43,983.58	$102,489.00
	Camcorder	$49,402.85	$101,705.00
	Computers	$34,025.21	$65,100.00
	Media Player	$64,799.74	$212,271.00
	Stereo Systems	$80,896.88	$188,275.00
	Televisions	$19,677.86	$65,376.00
	Video Production	$14,979.52	$31,102.00

Preferences for Managing Code

The Options menu, invoked from the Options button on the toolbar, presents preferences that help you manage your code.

You can selectively turn these preferences off or on in a file, as shown in the following image.



Preferences include:

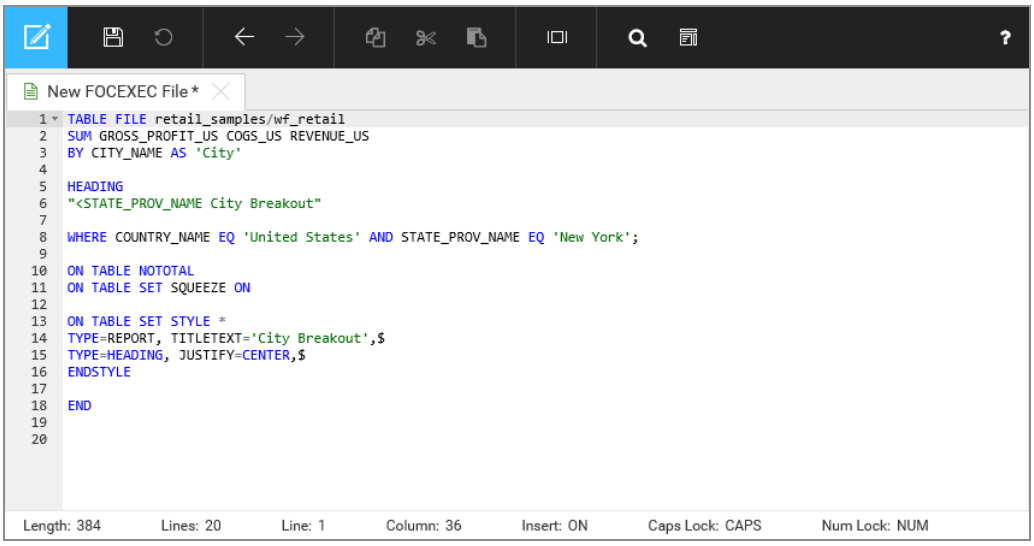
- **Line numbering.** Displays line numbers, including blank lines, in the sidebar. The default value is on.
- **Code folding.** Allows you to selectively collapse and expand sections of a currently edited file, so that you can look at the code structurally. The default value is on.
- **Autocomplete.** Allows progressive addition and suggestion of code as you type. Autocomplete is available for FOCEXEC, HTML, JavaScript, CSS, and Python files. Autocomplete is not supported for SQL, R, STY, and TXT files. The default value is on.
- **Status bar.** Displays contextual information for the active file being edited. The default value is on.
- **Indent guides.** Visually displays indent levels in code. The Tab key moves four columns at a time, putting invisible tab characters into the file. The default value is on.

Line Numbering

The Editor supports line numbering, which displays line numbers for each line you create in the Editor, including blank lines. The line numbers appear in the sidebar. This is useful when you need to refer to specific lines in a file.

You can selectively turn line numbering off or on from the Options menu on the toolbar. The default value is on.

The following image displays a WebFOCUS procedure, with line numbers in the sidebar, for each line of code.



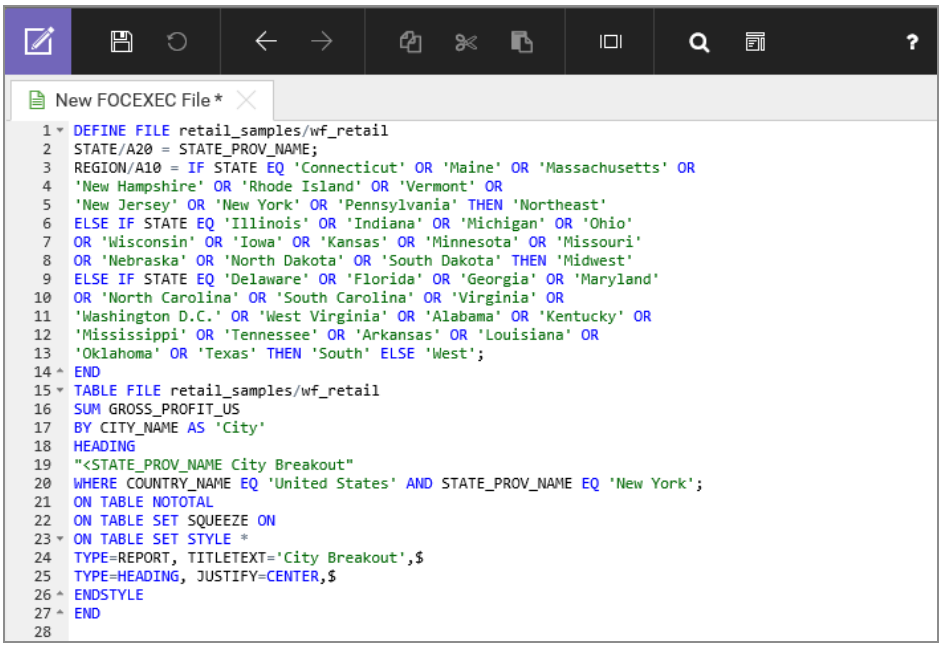
Code Folding

The Editor supports code folding, which lets you selectively collapse and expand sections of code in a file you are currently editing. This is useful when you need to manage large amounts of code, and view only those subsections that are relevant.

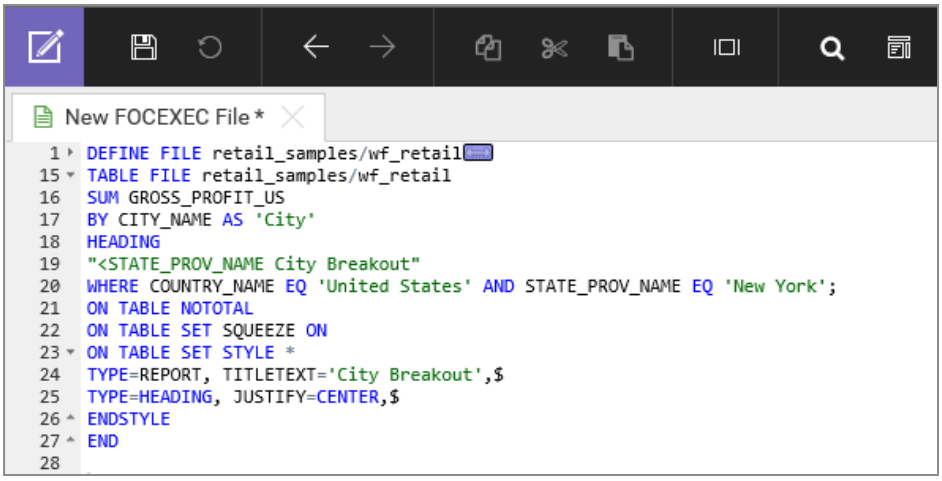
You can selectively turn code folding off or on from the Options menu on the toolbar. The default value is on.

Code folding is supported in a FOCEXEC for WebFOCUS DEFINE, TABLE, GRAPH, Dialogue Manager, and inline Stylesheet code. It is also supported for JavaScript, CSS, HTML, and Python files. Code folding is not supported for SQL and R files.

The following image displays a WebFOCUS procedure, with the code-folding toggle icons included in the sidebar (lines 1, 14, 15, 23, 26, and 27).



To collapse the DEFINE statement, click the code-folding toggle icon on the DEFINE FILE command line (line 1). Note that lines 1 through 14 are collapsed, as shown in the following image.



To collapse the inline StyleSheet code, click the code-folding toggle icon on the ON TABLE SET STYLE command line (line 23). Note that lines 23 through 26 are collapsed, as shown in the following image.

New FOCEXEC File *

```
 1 DEFINE FILE retail_samples/wf_retail
15 TABLE FILE retail_samples/wf_retail
16 SUM GROSS_PROFIT_US
17 BY CITY_NAME AS 'City'
18 HEADING
19 "<STATE_PROV_NAME City Breakout"
20 WHERE COUNTRY_NAME EQ 'United States' AND STATE_PROV_NAME EQ 'New York';
21 ON TABLE NOTOTAL
22 ON TABLE SET SQUEEZE ON
23 ON TABLE SET STYLE *
27 END
28
```

To collapse the TABLE request, click the code-folding toggle icon on the TABLE FILE command line (line 15). Note that lines 15 through 27 are collapsed, as shown in the following image.

New FOCEXEC File *

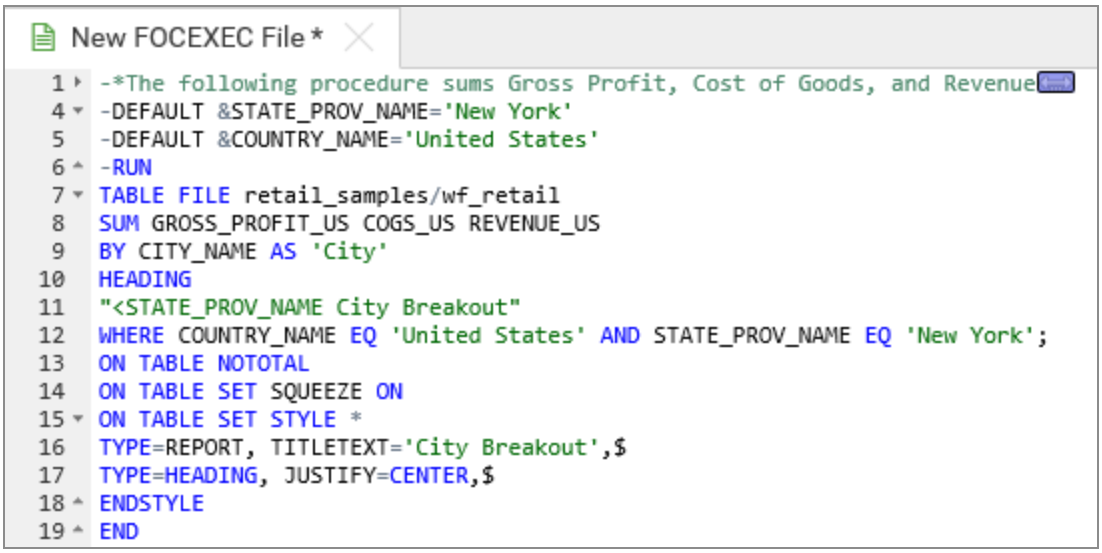
```
 1 DEFINE FILE retail_samples/wf_retail
15 TABLE FILE retail_samples/wf_retail
28
```

The following procedure shows the code folding icons on comment lines (lines 1 and 3) and Dialogue Manager commands (lines 4 and 6).

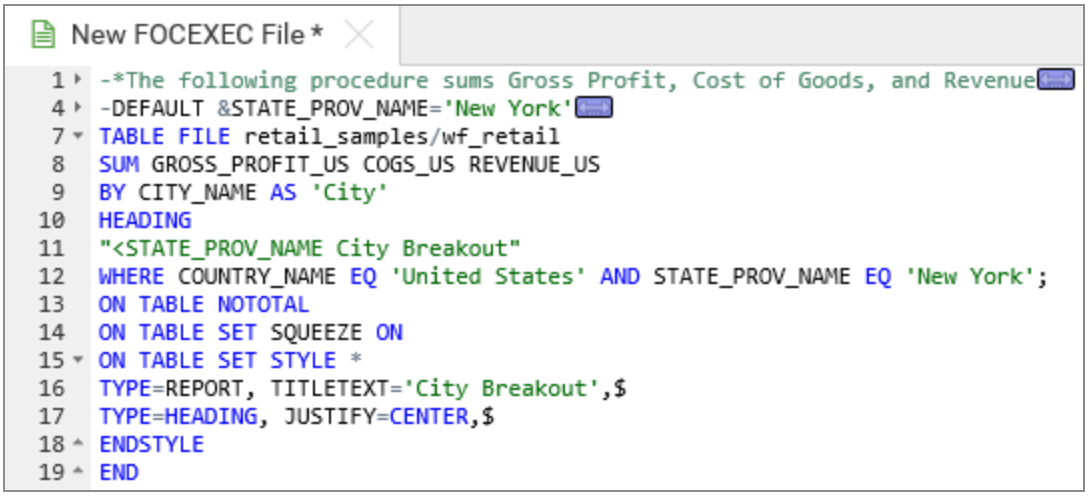
New FOCEXEC File *

```
 1 -*The following procedure sums Gross Profit, Cost of Goods, and Revenue
 2 -*for cities in New York.
 3 -*
 4 -DEFAULT &STATE_PROV_NAME='New York'
 5 -DEFAULT &COUNTRY_NAME='United States'
 6 -RUN
 7 TABLE FILE retail_samples/wf_retail
 8 SUM GROSS_PROFIT_US COGS_US REVENUE_US
 9 BY CITY_NAME AS 'City'
10 HEADING
11 "<STATE_PROV_NAME City Breakout"
12 WHERE COUNTRY_NAME EQ 'United States' AND STATE_PROV_NAME EQ 'New York';
13 ON TABLE NOTOTAL
14 ON TABLE SET SQUEEZE ON
15 ON TABLE SET STYLE *
16 TYPE=REPORT, TITLETEXT='City Breakout',$
17 TYPE=HEADING, JUSTIFY=CENTER,$
18 ENDSTYLE
19 END
```

To collapse the comment lines, click the code folding icon on line 1. Note that lines 1 through 3 are collapsed, as shown in the following image.



To collapse the Dialogue Manager commands, click the code folding icon on line 4. Note that lines 4 through 6 are collapsed, as shown in the following image.



Usage Notes for Code Folding

- The code folding icons appear if there is more than one line for a block of code or commands for which code folding is supported.
- To expand a section of code that is collapsed, you can click the code-folding toggle icon or the double-headed arrow icon at the end of the command line.
- Comment lines, which begin with a dash followed by an asterisk (-*), are collapsed separately from other Dialogue Manager commands.

- Adding a blank line between blocks of similar code, such as comment lines or Dialogue Manager commands, separates the block of code and a new segment for code folding is created.
- In files, where nested blocks of code are indicated by starting and ending curly brackets { }, such as JavaScript and CSS files, code-folding icons are enabled on the lines where the open and close curly brackets are displayed.
- If the cursor is in a block of code, you can press Alt+0 to collapse all other regions, except for the block of code currently in focus.
- You can also press Shift+Alt+0 to expand all regions of the code.
- When using Search and Replace features, if the search criteria are met within any collapsed lines, the lines are automatically expanded to show the search criteria found.

Autocomplete

Autocomplete is a function that allows progressive suggestion of code as you type.

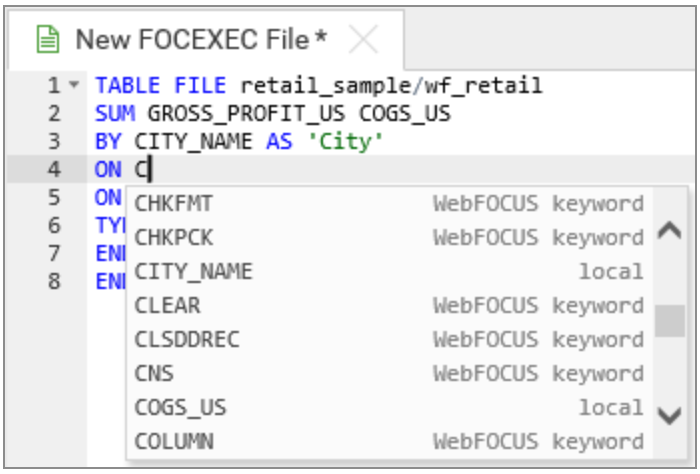
You can selectively turn Autocomplete off or on from the Options menu on the toolbar. The default value is on.

When typing the code, a list of suggestions display below the text, in alphabetical order. You can use the up and down arrow keys to navigate to the desired value and press Enter to select the value.

The suggestion list displays one of the following labels, on the right of each suggestion:

- **WebFOCUS keyword.** Indicates that a command is a WebFOCUS keyword, such as CLEAR and COLUMN, in the following example.
- **local.** Is used for words that are not WebFOCUS keywords, such as CITY_NAME. The label, local, is displayed on the second or later attempts to type the word.

Note: In the following example, the variables COG_US and CITY_NAME are not WebFOCUS keywords, they are local to the syntax. On the second attempt or later attempt to type the letter C, both variables display as local, as shown in the following image.



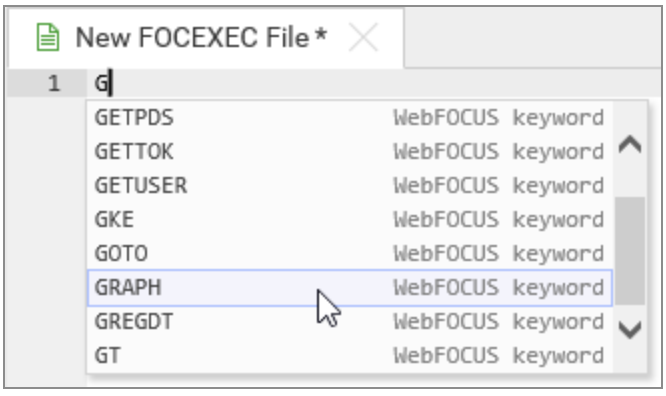
Autocomplete is available for FOCEXEC, HTML, JavaScript, CSS, and Python files. Autocomplete is not supported for SQL, R, STY, and TXT files.

Create a Simple Procedure With Autocomplete

Procedure

1. On the Editor toolbar, from the Options menu, select **Autocomplete**.
2. Create a GRAPH request.
3. Type the letter G in the Editor.

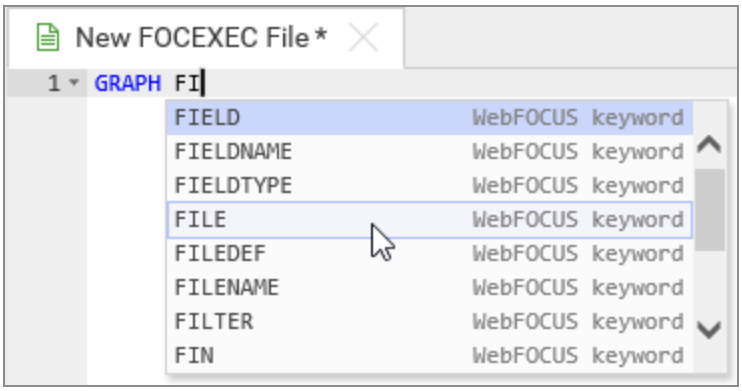
   Note that the command GRAPH is suggested, as shown in the following image.



   Note also that GRAPH is a WebFOCUS keyword.

4. Scroll and press Enter to select GRAPH.
5. Type the letters FI in the Editor.

Note that the command FILE is suggested, as shown in the following image.

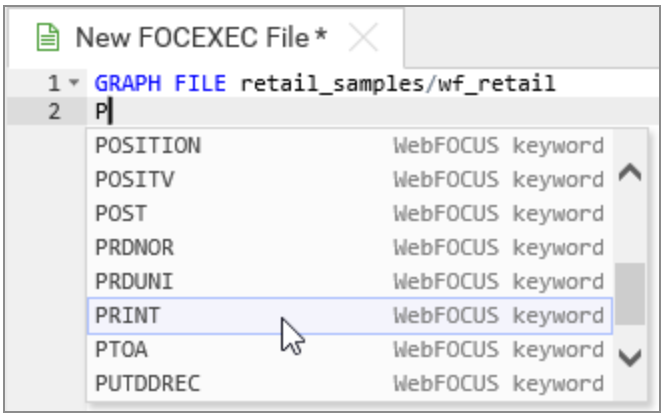


6. Scroll and press Enter to select FILE.
7. Type the name of the Master File.

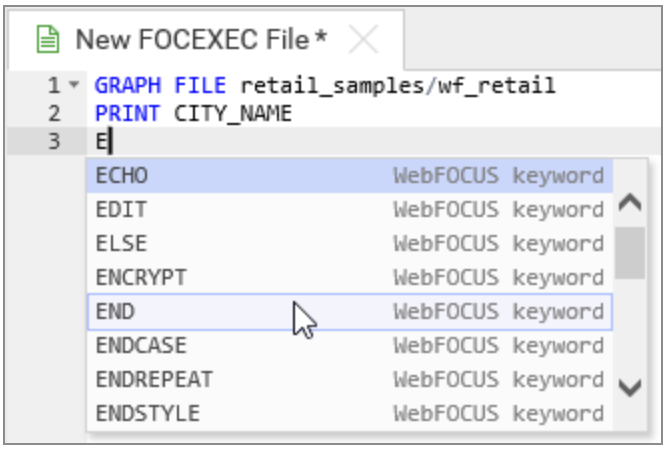
> **Note:**
> Autocomplete is not supported for Master Files.

8. Type the letter P in the Editor.

   Note that the command PRINT is suggested, as shown in the following image.



9. Scroll and press Enter to select PRINT.
10. Type a field from the Master File, for example, CITY_NAME.
11. Press Enter to move to the next line and then type the letter E in the Editor.
12. The command END is suggested, as shown in the following image.



13. Scroll and press Enter to select END.

Status Bar

The Status bar displays contextual information for a open file at the bottom of the Editor.

You can selectively turn the status bar off or on from the Options menu on the toolbar. The default value is on.

> **Note:** The Status bar is global for the Editor environment. If you uncheck the Status Bar option in one tab, this is applied to all open tabs, including any new tabs you create in the Editor.

The following values display in the Status bar:

- **Length.** Length, in characters, of the text in the active file.
- **Lines.** Total number of lines in the current file, including blank lines.
- **Line.** Line number of cursor position.
- **Column.** Column number of the cursor position.
- **Insert.** Indicates the status of insert or overtype mode. This setting is controlled by the Insert key on your keyboard. When the value for Insert is ON, your keyboard is in insert mode, and text is placed in front of the cursor position. When the value for Insert is OFF, your keyboard is in overtype mode, and existing characters are overwritten.
- **Caps Lock.** Indicates the status of Caps Lock. This setting is controlled by the Caps

Lock key on your keyboard. No value is shown when Caps Lock is off. The value on the Status bar does not change when you press the Caps Lock key. The value is detected and changed to CAPS when you type a character on the keyboard.

- **Num Lock.** Indicates the status of Num Lock, when working with the numeric keypad. This setting is controlled by the Num Lock key on your keyboard. No value is shown when Num Lock is off. The value on the Status bar does not change when you press the Num Lock key. The value is detected and changed to NUM when you type a number using the numeric keypad.

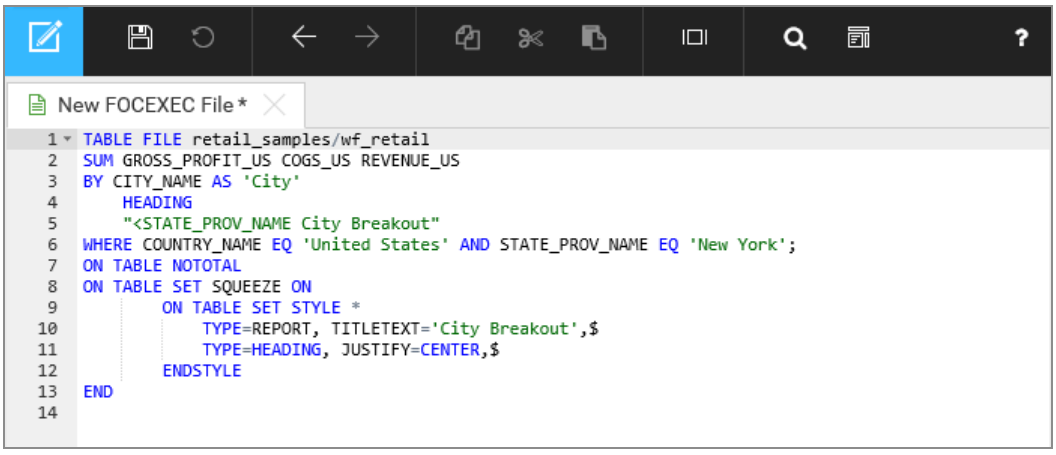
The following image shows an example of the values displayed in the Status bar.

Indent Guides

Indent guides are useful in helping you understand the structure of code by showing indentation levels and to quickly find where a block of code starts and ends.

You can selectively turn indent lines off or on from the Options menu on the toolbar. The default value is on.

Clicking the Tab key inserts a 4-space indent. The indent guides are represented by vertical light gray lines, as shown in the following image.

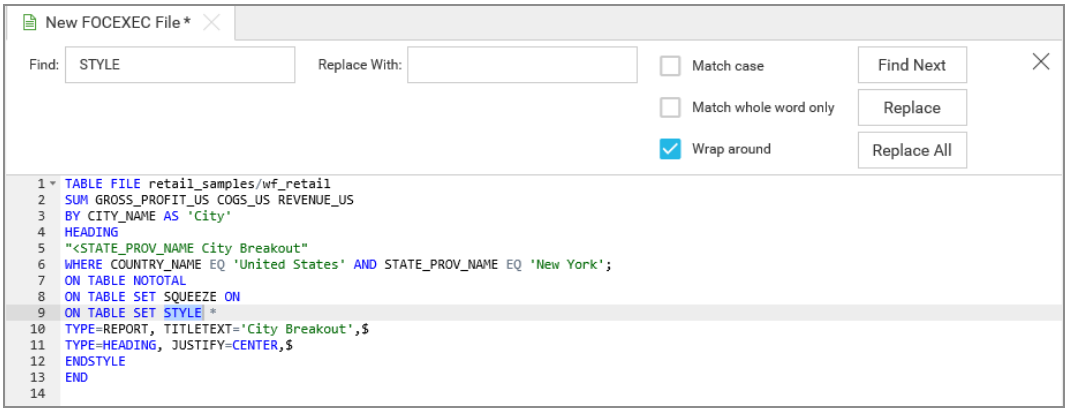


Using Search and Replace

The Search button on the toolbar opens the Search and Replace pane, where you can search for and replace text in the file you are currently editing.

You can click the Search icon again to toggle the Search and Replace pane off or on. You can also close the Search and Replace pane by clicking the **X** in the upper-right corner of the screen.

The Search and Replace pane is shown in the following image.



The Search and Replace pane contains the following options:

- **Find.** Finds the search criteria specified in the Find input box.
- **Replace With.** Replaces the search criteria specified in the Find input box with the criteria specified in the Replace With input box.
- **Match case.** Locates the search criteria specified in the Find Input box when there is an exact match of the criteria and case in the Editor. This option is off, by default.
- **Match whole word only.** Locates an exact match, whole word only, for the search criteria specified in the Find input box. This option is off, by default.
- **Wrap around.** If the search reaches the bottom of the file, it automatically continues to search from the top of the file and ends at the current position of the cursor. If this option is not selected, search ends at the bottom of the file, regardless of where the cursor is located. This option is on, by default.
- **Find Next.** Finds the next instance of the search criteria specified in the Find input box, using the selected options.
- **Replace.** Finds the next instance of the search criteria specified in the Find input box, using the selected options. The search criteria are replaced with the criteria

specified in the Replace With input box, and the next instance is highlighted.

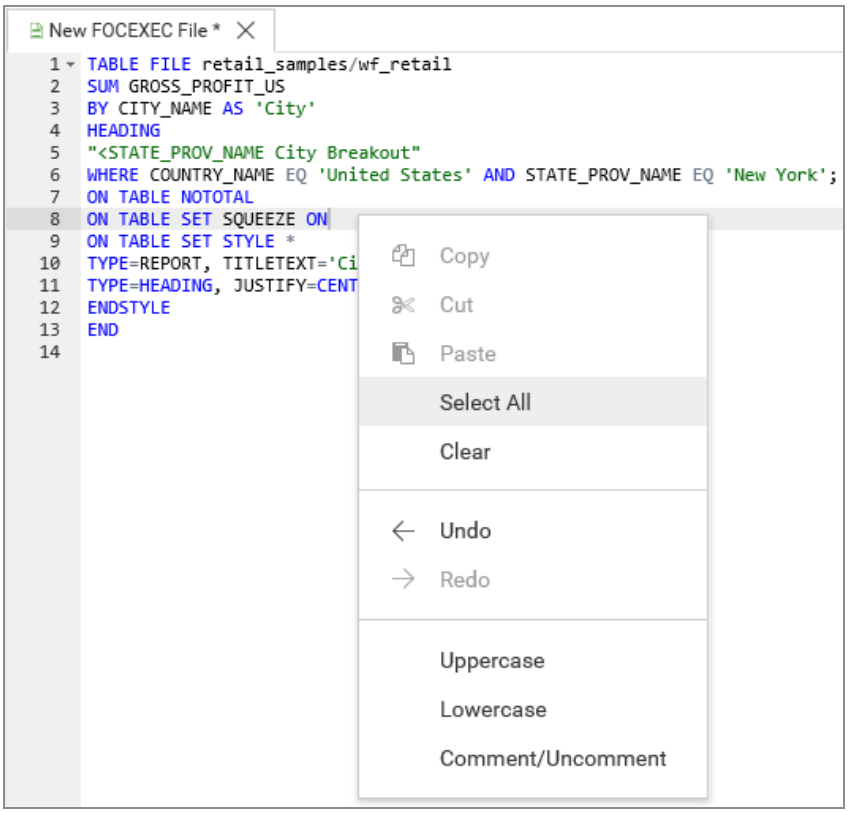
- **Replace All.** Finds all instances of the search criteria specified in the Find input box and replaces them with the criteria specified in the Replace With input box.

Note:

- You can also press **Ctrl+F** or **Ctrl+H** to open the Search and Replace pane.
- If the search criteria are not found, a message displays, indicating that the text was not found.

Working With the Editor Canvas

The Editor canvas is the main editing area. This is where you type code and see your enabled preferences, if any. The right-click menu options only work in this area, but the shortcut keys are always available. The code canvas is shown in the following image.



Right-click menu options include:

- **Copy.** Copies your selection to the clipboard. You can also press **Ctrl+C** to copy text.
- **Cut.** Deletes your selection and places it on the clipboard. You can also press **Ctrl+X** to delete text.
- **Paste.** Pastes your selection from the clipboard to the location indicated by the cursor. You can also press **Ctrl+V** to paste text.
- **Select All.** Selects all text in the active file. You can also press **Ctrl+A** to select all text.
- **Clear.** Deletes the selected text. You can also use the Delete key to delete the selected text.
- **Undo.** Reverses the last action, such as typing, pasting, or deleting text. You can also press **Ctrl+Z** to undo the last action. If there are no changes to a page, the Undo option is not active. To undo multiple actions, including actions that have been saved, you can click the **Undo** option or press **Ctrl+Z** repeatedly.
- **Redo.** Restores a previously undone action. You can also press Ctrl+Y to restore a previously undone action. If the Redo option does not apply, the option is not active. To redo multiple actions, including actions that have been saved, you can click the **Redo** option or press Ctrl+Y repeatedly.
- **Uppercase.** Changes selected lines of text from lowercase to uppercase. If the selected text is mixed case, all text is converted to uppercase. If the selected text is uppercase, no change occurs.
- **Lowercase.** Changes selected lines of text from uppercase to lowercase. If the selected text is mixed case, all text is converted to lowercase. If the selected text is lowercase, no change occurs.
- **Comment/Uncomment.** Adds the dash asterisk (-*) characters in a FOCEXEC at the beginning of a line of syntax in which the cursor is inserted. These characters indicate a comment. When multiple lines of code are selected, the comment is inserted on each selected line. When the comment is selected a second time, comments on selected lines are removed.

Introducing the ibi WebFOCUS Mobile App

The ibi™ WebFOCUS® Mobile App is a simple, intuitive app that empowers users to perform reporting and analysis right from their mobile devices. The WebFOCUS® Mobile App delivers rich, deep, highly interactive analytic functionality, fully exploiting the native device

gestures that are already familiar to the user. With the WebFOCUS app, you can manipulate data from a variety of sources in an almost unlimited number of ways in just a couple of taps. The app allows you to manage business dashboards and content, even when you are not connected to the Internet.

The WebFOCUS Mobile App is displayed in the following image.

With the WebFOCUS Mobile App, you can:

- Run reports, graphs, and dashboards online, from any corporate data in any source.
- Sort, filter, drill down, roll-up, calculate, and more, in both online and offline modes.
- Fully support native device characteristics, gestures, charting, menus, and controls within content.
- Open and catalog documents received as email attachments.
- Find and retrieve content using native search capabilities.
- Share content with other members of your organization.

Configuring ibi WebFOCUS Mobile App

To download WebFOCUS Mobile App on an iOS device, simply type *webfocus* in the search field in the App Store and choose the WebFOCUS app.

On an Android™-based device, connect to the Google Play store, navigate to the WebFOCUS mobile app, and tap **Install**.

Once the app is installed on your device, you can start configuring a connection to your WebFOCUS environment.

Prerequisites to Using the ibi WebFOCUS Mobile App

To perform online analytics, you must connect to the Wifi network that your company uses or configure a VPN connection on a remote device.

Configure a Connection in ibi WebFOCUS Mobile App

Procedure

1. Tap the WebFOCUS mobile app icon.

   The app opens and displays the Sites screen.

2. Tap the + icon to add a connection.

   The Add Site screen displays.

3. Populate the fields, as described below.

   HTTPS

   Specifies whether the server is on an HTTP or HTTPS site.

   Host name

   The Host name, or IP address, of the machine that is hosting the WebFOCUS client.

   Host port

   The port number to the WebFOCUS client.

   Context path

   The application context path. For example, /ibi_apps.

Host title

The name of your WebFOCUS client connection. The name can be anything you want it to be.

> **Note:** The Host title only shows as a field when you configure the connection for the first time. If you edit an existing environment, the host title does not show as an option.

User name

The user name that you use to log in to your WebFOCUS client.

Password

The password you use to log in to your WebFOCUS client.

New interface

Enable this option to connect to the WebFOCUS Home Page. This option is only available when connecting to a WebFOCUS 8.2 Version 04 environment or higher. The default value is Off.

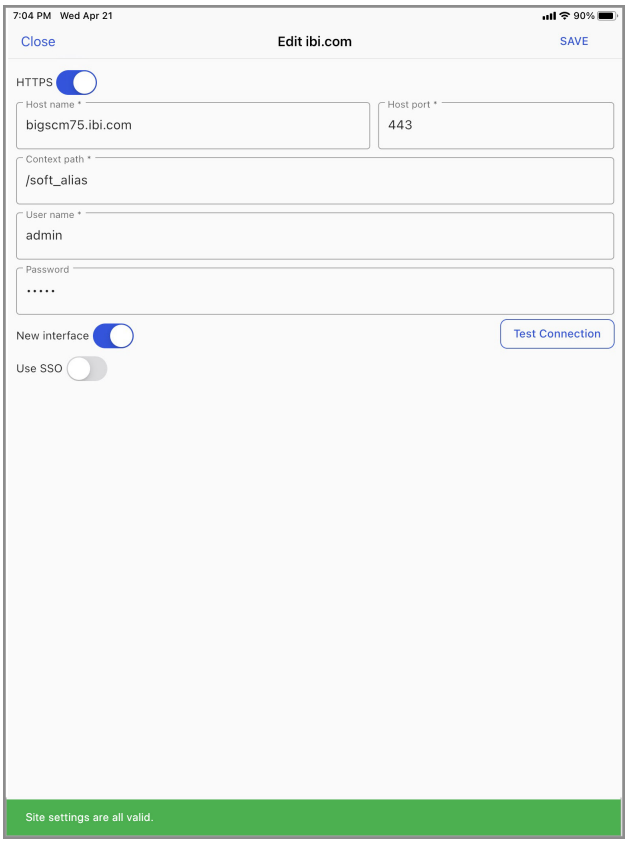
Use SSO

Enable this option to use a single sign on (SSO) solution to sign in to the environment. If such solution is enabled, the screen redirects to the SSO login screen within the app. The default value is Off.

> **Note:** For more information on configuring pre-authentication with a single sign on (SSO) solution, see the *ibi™ WebFOCUS® Security and Administration* technical content.

4. Tap **Test Connection**.

   If your configuration is correct, a message appears on the bottom of the screen confirming that the site settings are valid, as shown in the following image.



Note: If the connection is unsuccessful, you see an error message identifying the field that causes an issue.

5. Tap **SAVE**.

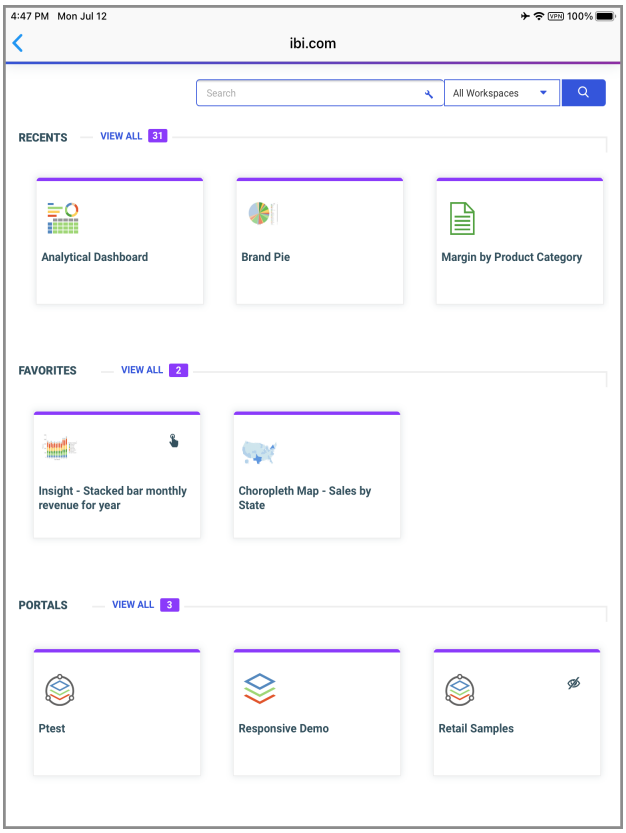
   The Sites screen displays, and the new connection is added, as shown in the following image.

6. Tap the newly configured connection.

   The WebFOCUS Home Page loads.

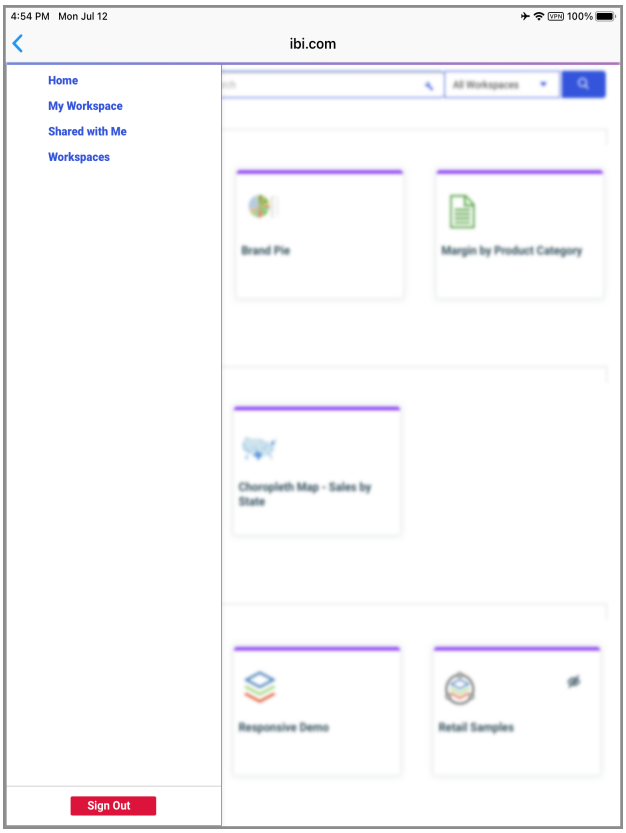
Navigating the ibi WebFOCUS Home Page on a Mobile App

The Home Page is the default landing page that opens when you first sign in to WebFOCUS from the WebFOCUS Mobile App, as shown in the following image.



The Home Page serves as a centralized place for viewing and sharing content, and performing searches. There are several interface and functionality changes that occur when you navigate the Home Page on the WebFOCUS Mobile App, allowing you to view the content saved in your environment.

When you view the Home Page on the WebFOCUS app, the banner navigation is hidden from view to allow more space for your content. You can bring the banner navigation back by tapping the menu button ☰ on the navigation bar. The sidebar allows you to navigate between the Home, My Workspace, Shared with Me, and Workspaces views on the Home Page, as shown in the following image.



The banner menus are also hidden in the mobile app view. To access the functionality available from the banner menus, you need to use the full desktop version of the software. The Change Password and Sign Out options are available from the sidebar and also from the user menu in the upper right corner of your mobile display.

Note: Depending on the type and size of your device, your display might switch to the full version of WebFOCUS in the landscape view.

You can run content in the WebFOCUS Mobile App by double-tapping an item. Select shortcut menu options are also available from the app. To access the shortcut menu options, tap and hold the item. The shortcut menu options are context-sensitive, and vary, depending on the item or element you want to access.

To navigate between workspaces and folders inside the WebFOCUS Mobile App, use the Resources tree or the breadcrumb trail in the Workspaces view. The arrows between the directories on the breadcrumb trail allow you to switch between different folders. Tap the ellipsis to navigate between the levels that are hidden from view.

You can also search, switch between list and grid views, refresh and sort content from the mobile app. These functions behave in the same way as they do in the full desktop view.

Using ibi WebFOCUS Mobile App to View In-Document Analytics Reports

An In-Document Analytics report is an interactive report that is designed for offline analysis. It contains all the data and JavaScript® within the HTML output file. Packaging the data and the interactive functions in the HTML file also makes the output highly compressible for email and transparent to security systems.

Viewing In-Document Analytics reports on mobile devices is only possible if JavaScript is enabled in the web browser. Some browsers may function differently depending on the operating system. WebFOCUS Mobile App makes it easy to view any In-Document Analytics report on any iOS or Android-based device.

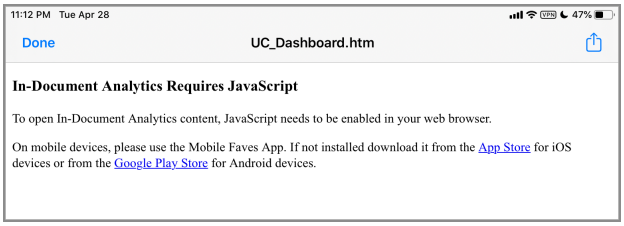
View an In-Document Analytics Report in the ibi WebFOCUS Mobile App

In this example, we download an In-Document Analytics report from an email attachment and open it in the mobile WebFOCUS Mobile App.

Procedure

1. In the mail app of your mobile device, open an email with the In-Document Analytics report attachment and then tap on the attached report to download it.

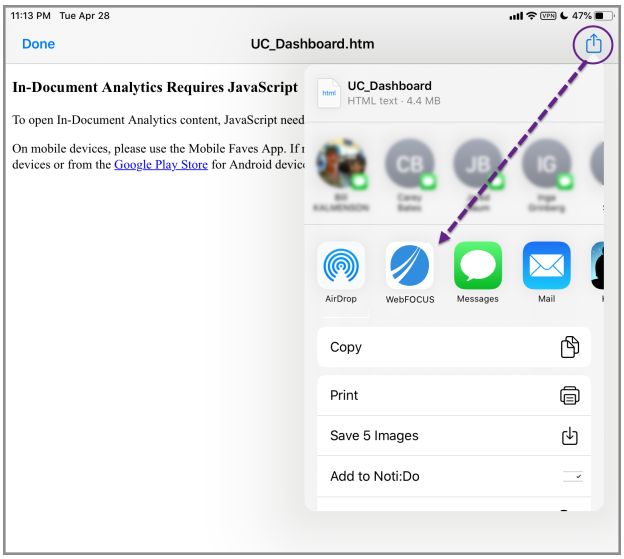
   The message displays informing you that JavaScript is needed for opening the report, as shown in the following image.



2. Tap the Share icon.

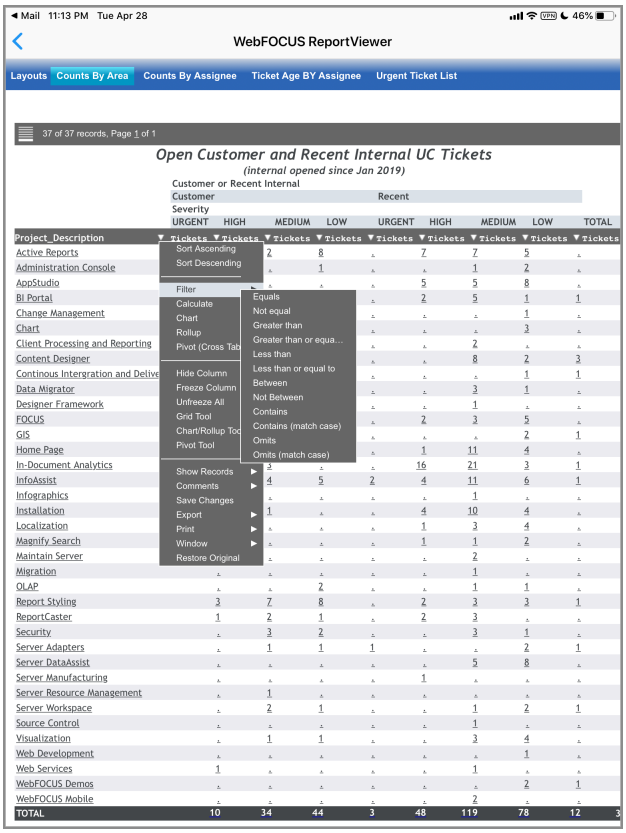
   The Share options that are enabled on your device display.

3. Tap **Copy to WebFOCUS**, as shown in the following image.



Note: Depending on your device and its preferences, you may need to scroll and tap **More** to see the **Copy to WebFOCUS** option.

The WebFOCUS ReportViewer screen opens inside the WebFOCUS Mobile App, displaying the report. You can now work with the report, online and offline, and use its interactive features, as shown in the following image.


Mail 11:13 PM Tue Apr 28
46%
WebFOCUS ReportViewer
Layouts
Counts By Area
Counts By Assignee
Ticket Age BY Assignee
Urgent Ticket List
37 of 37 records, Page 1 of 1
Open Customer and Recent Internal UC Tickets
(internal opened since Jan 2019)
Customer or Recent Internal
Customer
Recent
Severity
URGENT HIGH MEDIUM LOW URGENT HIGH MEDIUM LOW TOTAL
Project_Description Tickets Tickets Tickets Tickets Tickets Tickets Tickets Tickets Tickets
Active Reports 2 8 7 7 5
Administration Console 1 1 2
AppStudio 5 5 8
BI Portal 2 5 1 1
Change Management 1
Chart 3
Client Processing and Reporting 2
Content Designer 8 2 3
Continous Intergration and Delive 1 1
Data Migrator 3 1
Designer Framework 1
FOCUS 2 3 5
GIS 2 1
Home Page 1 11 4
In-Document Analytics 3 16 21 3 1
InfoAssist 4 5 2 4 11 6 1
Infographics 1
Installation 1 4 10 4
Localization 1 3 4
Magnify Search 1 1 2
Maintain Server 2
Migration 1
OLAP 2 1 1
Report Styling 3 7 8 2 3 3 1
ReportCaster 1 2 1 2 3
Security 3 2 3 1
Server Adapters 1 1 1 2 1
Server DataAssist 5 8
Server Manufacturing 1
Server Resource Management 1
Server Workspace 2 1 1 2 1
Source Control 1
Visualization 1 1 3 4
Web Development 1
Web Services 1 1
WebFOCUS Demos 2 1
WebFOCUS Mobile 2
TOTAL 10 34 44 3 48 119 78 12 3
Sort Ascending
Sort Descending
Filter
Calculate
Chart
Rollup
Pivot (Cross Tab
Hide Column
Freeze Column
Unfreeze All
Grid Tool
Chart/Rollup Too
Pivot Tool
Show Records
Comments
Save Changes
Export
Print
Window
Restore Original
Equals
Not equal
Greater than
Greater than or equa...
Less than
Less than or equal to
Between
Not Between
Contains
Contains (match case)
Omits
Omits (match case)

Accessing Data

Learn how to access all your data from a single streamlined environment using WebFOCUS. You can connect to various data sources, configure adapters, add or change connections, upload and profile data files before loading them, pivot columns to rows, and Join multiple tables. Then visualize your data and use it to create charts, reports, and other content.

Preparing Spreadsheets for Upload

Uploading data to WebFOCUS can be made easier if you first familiarize yourself with the data file, and then ensure that it is properly formatted for upload, so that geographic data, hierarchies, and other important aspects of your data are recognized. This is important because the synonym created for your uploaded data provides the basis for quality analytical content.

You can use the following techniques to prepare your data for the uploading process.

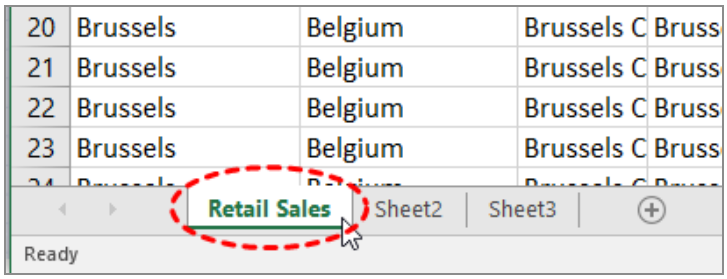
Naming Conventions and Microsoft Excel Sheet Names

For Excel spreadsheets, the name of the file is not important, but the name of the worksheet that contains your data is used to generate the synonym name. For the best results, note the following guidelines:

- Ensure that the worksheet name is meaningful. For example, Store Sales is better than Sheet1.
- Remove special characters from the worksheet name. Spaces are converted to underscores, but all non-alphanumeric characters should be removed from the name, such as the following:

  /`~!@#$%^()-+={}|;,
- Remove or replace NLS characters with standard alphanumeric characters.

The following image shows a worksheet with a meaningful name, Retail Sales.

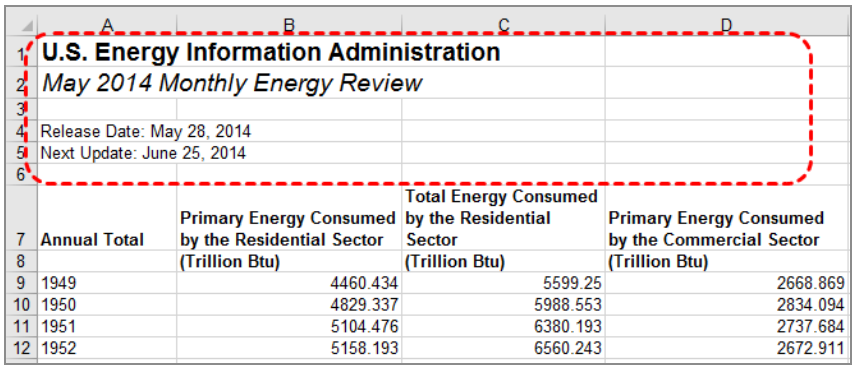


While you have an opportunity to edit the worksheet name within the Upload workflow, editing in Excel may be preferable. Note that your spreadsheet data and column titles may contain National Language Support data and special characters.

For CSV files, there is no worksheet name, so the CSV file name is used to generate the synonym name. For this reason, all of the limitations identified for Excel worksheet names apply to the CSV file name. Be sure to check and adjust the file name prior to the upload.

Removing Introductory Information

Sometimes, an Excel spreadsheet contains formatted headings in the first few rows. This information cannot be imported into WebFOCUS and should be removed. Delete the introductory rows and save the file before uploading. Alternatively, you can define a data range within your worksheet and leave the introductory information in place. The following image shows an example spreadsheet with a heading and subheadings highlighted.



	A	B	C	D
1	**U.S. Energy Information Administration**			
2	*May 2014 Monthly Energy Review*			
3				
4	Release Date: May 28, 2014			
5	Next Update: June 25, 2014			
6				
7	**Annual Total**	**Primary Energy Consumed by the Residential Sector**	**Total Energy Consumed by the Residential Sector**	**Primary Energy Consumed by the Commercial Sector**
8		**(Trillion Btu)**	**(Trillion Btu)**	**(Trillion Btu)**
9	1949	4460.434	5599.25	2668.869
10	1950	4829.337	5988.553	2834.094
11	1951	5104.476	6380.193	2737.684
12	1952	5158.193	6560.243	2672.911

Placing Column Titles in the First Row

For data to be useful in WebFOCUS, your data columns must be identified and properly described in the synonym that is generated during the upload process. You can make this easier by ensuring that the first few rows of your Excel spreadsheet contain column titles that are meaningful to you and to other users who are using it. An example of meaningful column titles is shown in the following image.

	A	B	C	D	E	F	G	H
1	Store Name	Country	State	City	Sale Date	Revenue	Cost of Goods	Gross Profit
2	Des Moines	United States	Iowa	Des Moines	9/5/2013	3487.45	2288	1199.45
3	Dayton	United States	Ohio	Dayton	9/1/2013	13371.56	9459	3912.56
4	South Salt Lake	United States	Utah	South Salt Lake	9/2/2013	5642.79	4049	1593.79
5	Oslo	Norway	Oslo	Oslo	10/2/2013	13094.04	9206	3888.04
6	Des Moines	United States	Iowa	Des Moines	10/5/2013	4821.17	2962	1859.17
7	Dayton	United States	Ohio	Dayton	10/2/2013	13094.04	9206	3888.04
8	South Salt Lake	United States	Utah	South Salt Lake	10/5/2013	5564.52	3853	1711.52
9	Oslo	Norway	Oslo	Oslo	11/13/2013	18957.63	13293	5664.63
10	Des Moines	United States	Iowa	Des Moines	11/6/2013	6092.9	4513	1579.9

If your spreadsheet has more than one row of column titles, WebFOCUS can merge the information when creating the synonym. You are given an option to specify how many first rows of the Excel file contain title information in the Upload workflow.

Removing Aggregated Information

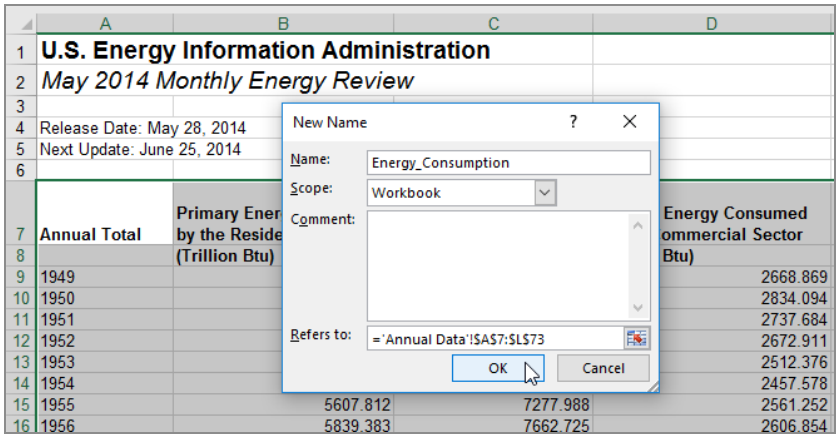
Excel spreadsheets may contain subtotals, grand totals, and other non-data row information. Data aggregation is performed by WebFOCUS, so you should remove these kinds of rows from your spreadsheet and save the file before uploading it.

Using Excel Name Ranges

Data ranges defined within your Excel worksheet can be helpful for the following reasons:

- Your worksheet may have introductory information, such as formatted headings or non-data information, in the first few columns.
- You may not want to import all of the data columns found on your worksheet.

You can define a data range in your worksheet to remove the data that you want WebFOCUS to process during upload, and leave your spreadsheet in its original format. An example of this is shown in the following image.



Preparing Hierarchical Data Columns

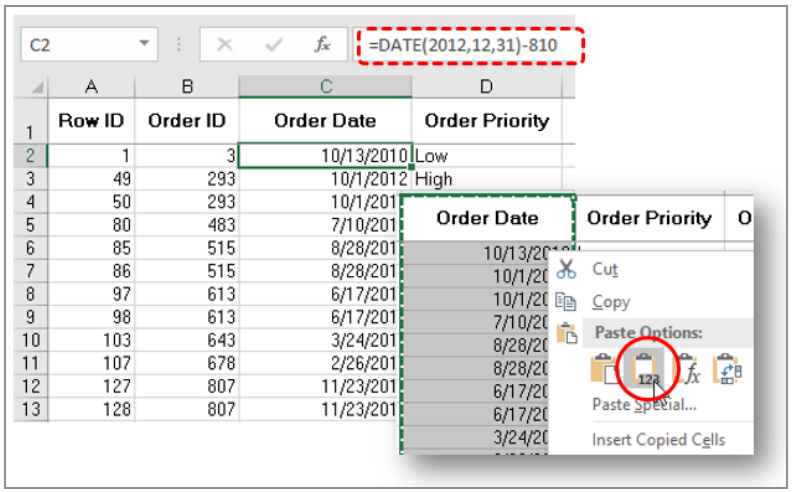
WebFOCUS recognizes columns of data that have hierarchical relationships. This is useful because the field names are arranged more logically in WebFOCUS InfoAssist and because it facilitates Auto-drill capabilities in the content. Auto-drill lets you drill up and down a field hierarchy automatically, making the content engaging and useful.

To help WebFOCUS recognize hierarchical columns correctly, ensure that the column titles begin with a common word or words, and are arranged left-to-right in the correct top-to-bottom direction, as shown in the following image. In the Upload workflow, you can define and edit dimension hierarchies prior to creating the synonym. You can also do this prior to the upload in Excel.

	A	B	C	D	E	F	G
1	Store Name	Product Category	Product Subcategory	Sale Date	Revenue	Cost of Goods	Gross Profit
2	Des Moines	Video Production	Video Editing	9/5/2013	3487.45	2288	1199.45
3	Dayton	Video Production	Video Editing	9/1/2013	13371.56	9459	3912.56
4	Dayton	Video Production	Video Editing	12/1/2013	19097.49	13386	5711.49
5	South Salt Lake	Video Production	Video Editing	12/1/2013	10763.83	8138	2625.83
6	Brussels	Accessories	Universal Remote Controls	3/2/2010	10060.72	7822	2238.72
7	Brussels	Accessories	Universal Remote Controls	4/1/2010	12839.15	9456	3383.15
8	Brussels	Accessories	Universal Remote Controls	5/1/2010	9848.13	6992	2856.13
9	Brussels	Accessories	Universal Remote Controls	6/1/2010	10357.7	7584	2773.7
10	Brussels	Accessories	Universal Remote Controls	7/1/2010	10979.11	8283	2696.11

Removing Date Formulas

Spreadsheets may contain a date column where the values are computed by Excel using a formula. You need to convert these computed values into simple values before uploading a spreadsheet. To remove date formulas, select a column, right-click, and then click **Copy**. Then, right-click the selected column again and select **Values**. This can be found under the Paste Options menu, which is highlighted in the following image. Menu options may vary by Excel release. Now you can see that each cell contains a date value, and WebFOCUS can decompose your dates into useful components for use in WebFOCUS InfoAssist.



Uploading Data Files

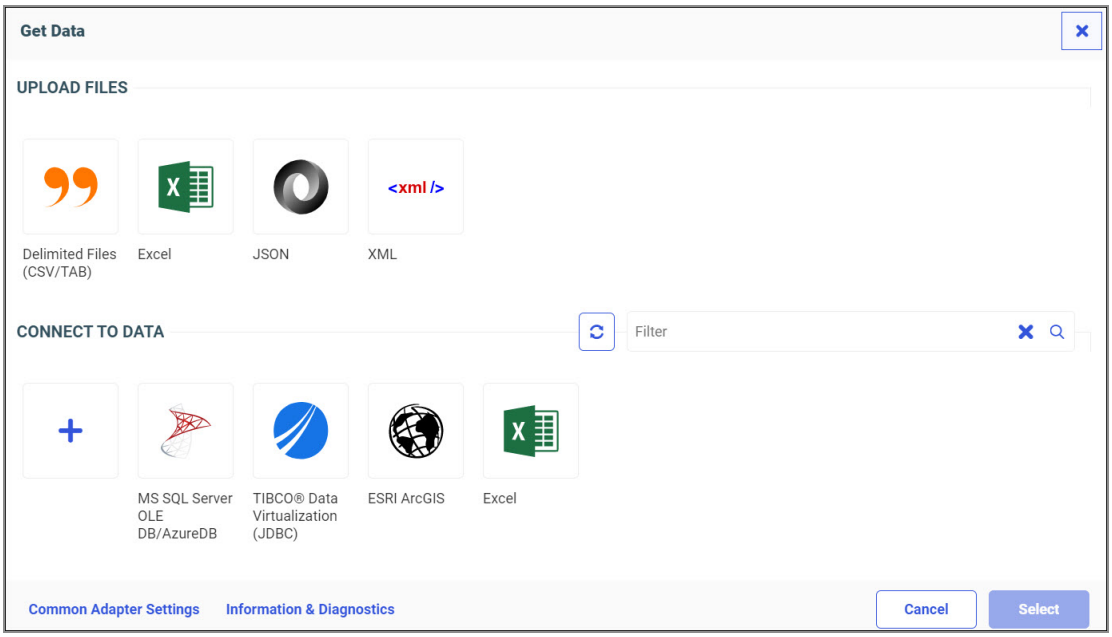
You can upload delimited, Excel, JSON, or XML files into WebFOCUS, where you can preview and modify the data before loading it to a database, then create visualizations or prepare it for future analysis.

Upload Data Files

Procedure

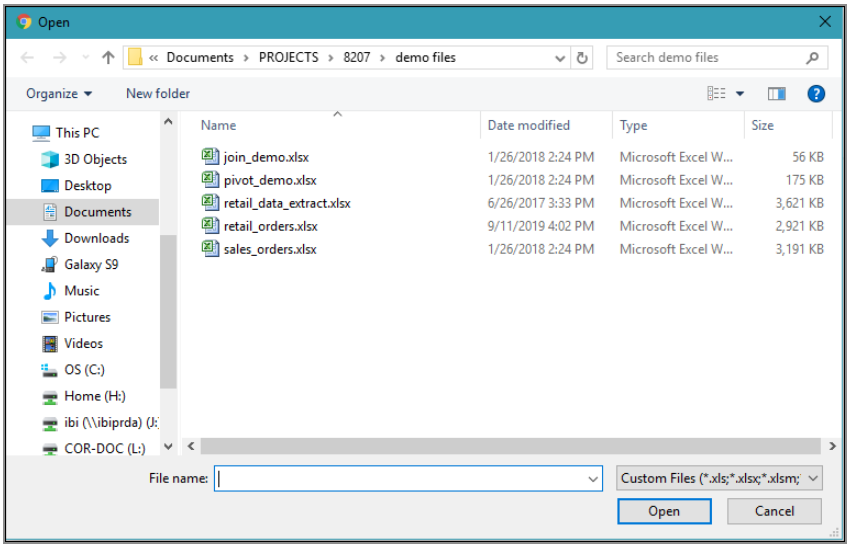
1. On the WebFOCUS Hub, click the plus menu, and then click **Get Data**, or, on the WebFOCUS Home Page, click the **Get Data** button Get Data.

   The Get Data dialog opens, as shown in the following image.



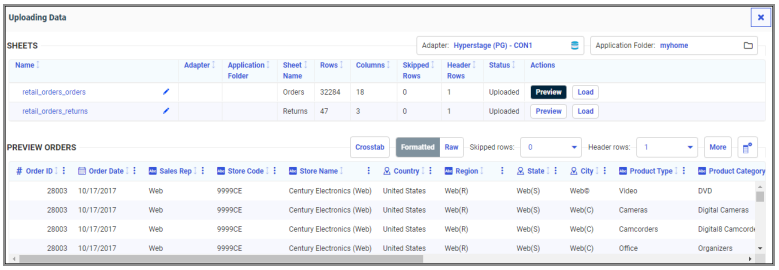
2. Under UPLOAD FILES, click your upload file type. You can select from the following file types: Delimited Files, Excel, JSON, or XML. An Excel file can contain a single worksheet or multiple worksheets. Delimited, JSON, and XML files are individual data sources.

   Your Open dialog displays, as shown in the following image.



3. In the Open dialog for your operating system, select the file that you want to upload, and then click **Open**.

This opens a preview, as shown in the following image. In this example, we are showing a multi-worksheet Excel file.



Your file is loaded to the default data store of the displayed Adapter. You can click the Adapter name to select an adapter folder and connection where your data is loaded. For more information Changing A Target Connection When Uploading Files.

You can click the Application Folder name to select an application folder and specify where your synonym is created. For more information, see Changing A Target Application When Uploading Files.

You can change the name of your worksheet by clicking inside the Name field and typing a new name. From the Actions column, click the **Preview** or **Hide** buttons to control the preview of sample data.

You can select individual worksheets to preview or load. A single-sheet Excel file, or the first worksheet of a multi-sheet Excel file, is automatically previewed.

You can modify your data, such as changing the number of skipped rows or header rows, displaying your data as formatted or raw, or choosing from more advanced and customized file options.

Uploaded Excel worksheets are examined for leading rows that contain titles or other extraneous information before the header rows and data values. These leading rows are automatically skipped. The number of rows to be skipped is displayed in the Skipped Rows field, and can be changed.

Note: If uploading a CSV or other delimited file, the data preview toolbar displays a Missing Value field. The characters in this field indicate a missing value in your data source, for example: "NULL". To see the Missing Value field when uploading an Excel file, click the **More** button, and then expand the **Advanced** group.

You can click the **Choose Columns** icon to select which columns you want to load to the target database or data store. For more information, see Choosing Columns to Load When Uploading Files.

Column dropdown menu options let you change geographic roles and data types, or rename columns.

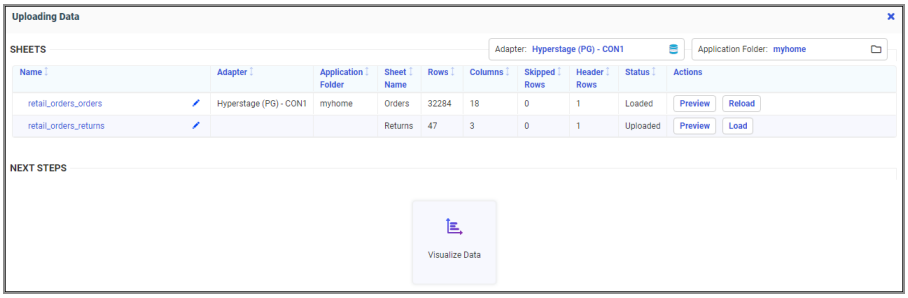
Numeric fields are generally classified as measures. If the name of a numeric field implies that it is more likely to be a dimension than a measure, it is classified as a dimension by default. For example, fields ending with _ID such as ORDER_ID are classified as dimensions. This allows you to create content that more accurately represents your data.

To change field classifications from dimensions to measures, select **Convert to measure**.

To change field classifications from measures to dimensions, select **Convert to dimension**.

4. Click the **Load** button next to the worksheet that you want to load.

   Your worksheet loads, and its load status is updated, as shown in the following image.



   You can still change your worksheet after it is initially loaded, and then click the **Reload** button to load your changes. Once your file is uploaded, you can create your own visualizations by clicking **Visualize Data**.

Changing A Target Connection When Uploading Files

When using Get Data to upload a file, with appropriate permission, you can override the default Adapter and Connection settings by selecting an alternative configured adapter from your current profile.

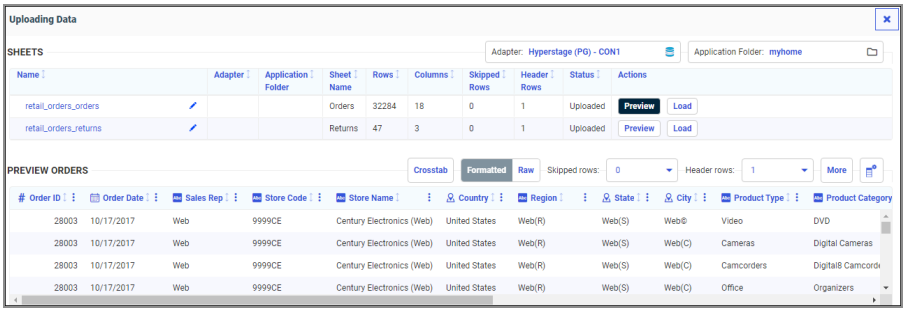
Change a Target Connection

When uploading an Excel or delimited file, you can select an adapter folder and specify the connection where your data is loaded.

Procedure

1. Upload an Excel or delimited file using Get Data.

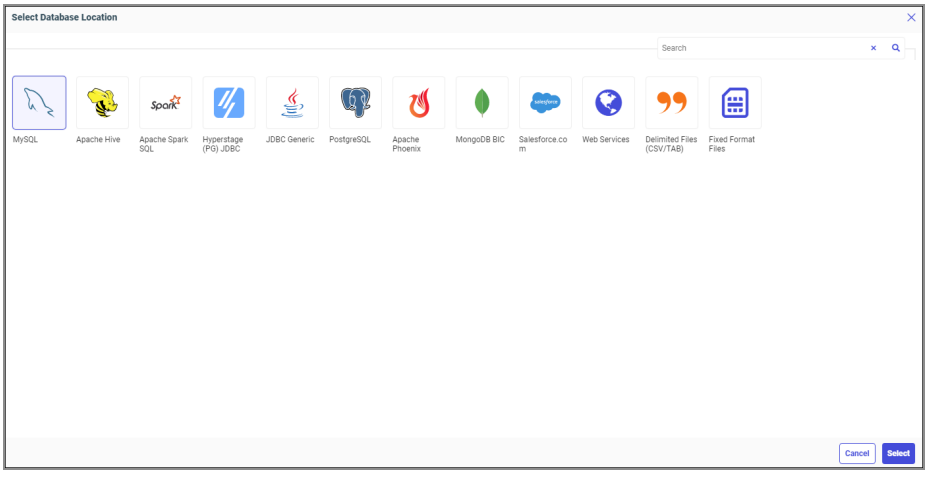
   The Preview page opens, as shown in the following image.



   The Adapter column remains blank until your data is loaded. Once you load a file, the Adapter column displays the adapter and connection where your data was loaded.

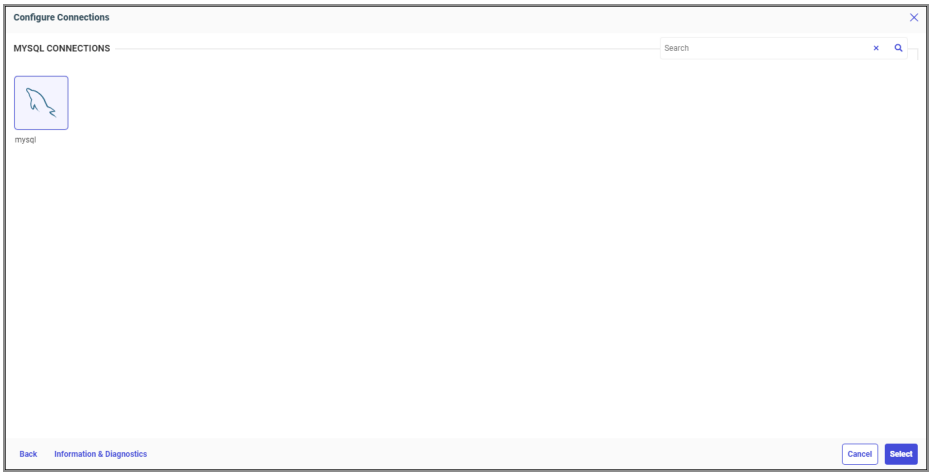
2. Click the Adapter name.

   The Database Location dialog opens, and displays the adapters configured on your server, as shown in the following image.



3. Click an available adapter, and then click **Select**.

The Configure Connections dialog opens, and displays the connections configured for the adapter you selected, as shown in the following image.

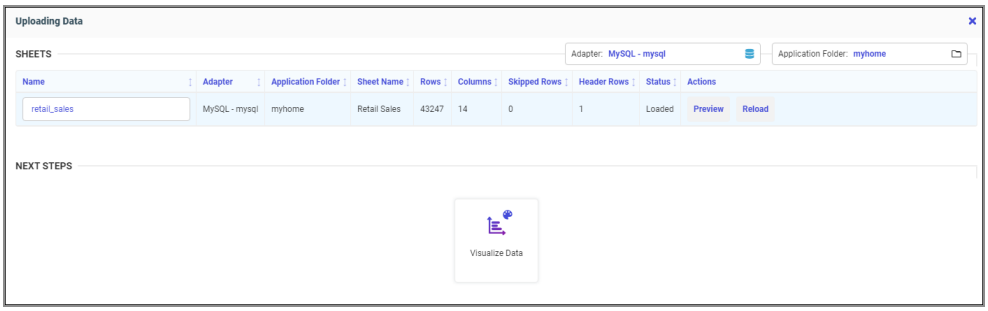


4. Click an available connection and then click **Select**.

   The Preview page displays.

5. Click **Load**.

   Your selected connection displays in the Adapter column, as shown in the following image.



Your data is saved by default to this connection for subsequent file loads.

Changing A Target Application When Uploading Files

When using Get Data to upload a file, with appropriate permission, you can override the default Application setting where the synonym is created by selecting an application folder from your current application path.

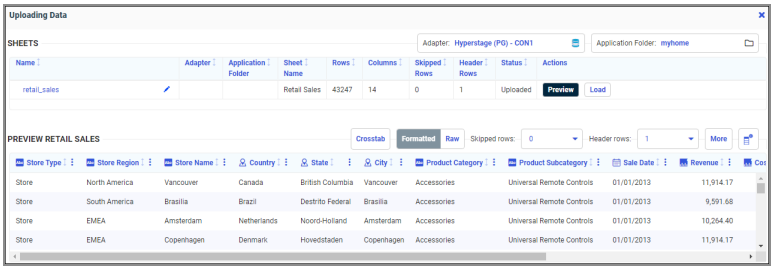
Change a Target Application

When uploading an Excel or delimited file to create a synonym, you can select an application folder and specify where your synonym is created.

Procedure

1. Upload an Excel or delimited file using Get Data.

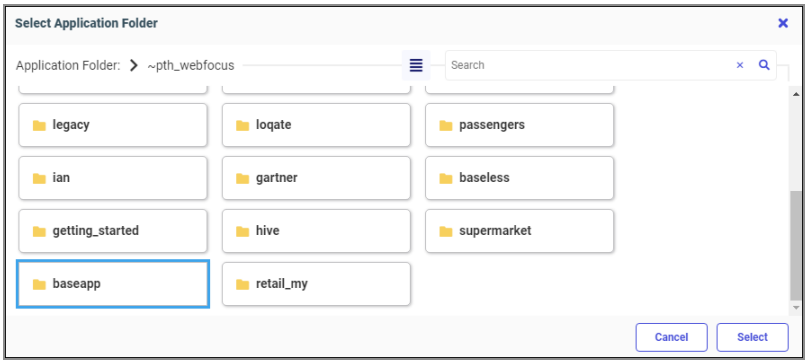
   The Preview page opens, as shown in the following image.



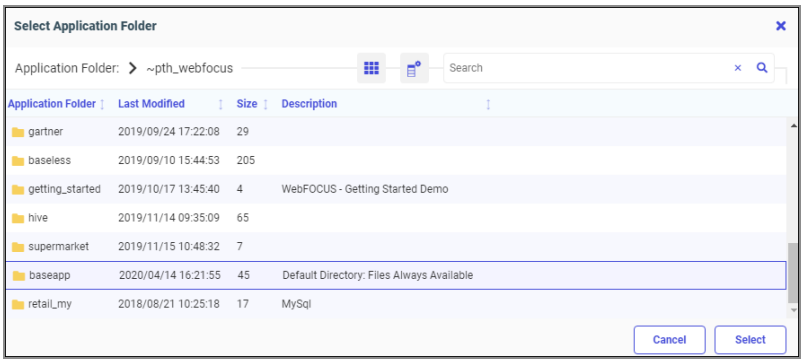
   The Application Folder column remains blank until your data is loaded. If you have previously loaded a file, the Application Folder column displays the application where you created your synonym.

2. Click the Application Folder name.

   The Select Application Folder dialog opens and displays your application folders in your current application path, as shown in the following image.



   You can click the View icon to switch between the Grid view, as shown above, and the List view, as shown in the following image.

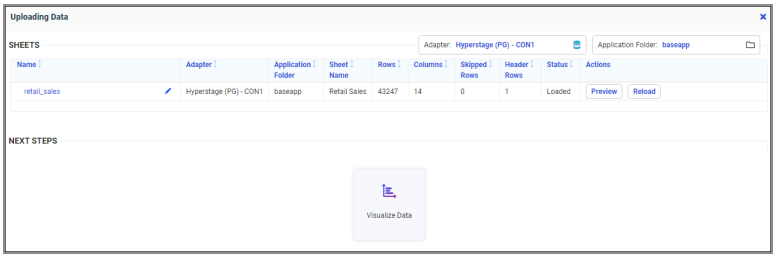


You can click the Choose Columns icon to select which columns to display in the List view.

3. Click your target application folder.
4. Click **Select**.

   The Preview page displays.
5. Click **Load**.

   Your selected application displays in the Application Folder column, as shown in the following image.



Your data is saved by default to this application folder for subsequent file loads.

Choosing Columns to Load When Uploading Files

When using Get Data to upload a file, you can choose which columns is loaded to the target database or data store, so you only load the columns you need.

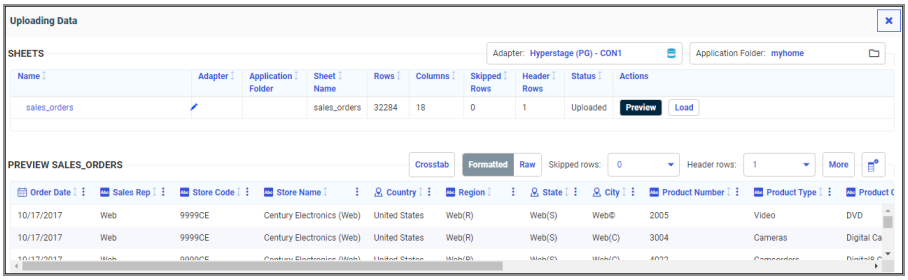
Choose Columns to Load

When uploading an Excel or delimited file, you can choose the columns that you want to be loaded.

Procedure

1. Upload an Excel or delimited file using Get Data.

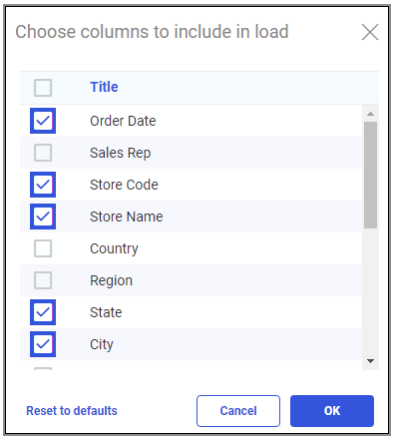
   The Preview page displays, as shown in the following image.



2. Click the **Choose Columns** icon .

   The Choose Columns dialog displays. All columns are selected by default.

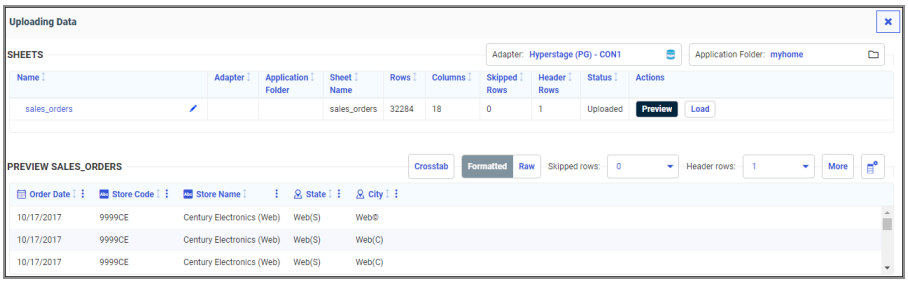
3. Clear the checkboxes for the columns that you do not want to be loaded, as shown in the following image.



   You can return the columns to their original selected settings by clicking **Reset to defaults**.

4. Click **OK**.

   The Preview page displays, and shows only the columns that you want to be loaded, as shown in the following image.



Note: You can click the **Choose Columns** icon again to change which columns you want to be loaded.

5. Click **Load** to load your data.

Processing Format Conversion Errors when Uploading Data

When uploading data from a delimited or Excel file, a format conversion error can occur, such as when a numeric field contains a non-numeric value. You have load options to control how to process rows that contain format errors, and to control how many format errors are allowed before processing stops.

The following conversion error load options are available when uploading files:

- Conversion error processing.

  You can select options **Reject** or **Ignore**. Reject, the default value, skips rows with incorrect data, and gives a warning message. Ignore replaces the values causing errors with default values, and continues processing the records.

- Conversion error limit.

  You can enter values of 0 to 999999. This sets a limit for the number of records allowed with warnings about data conversion errors. 0 is the default value, which allows unlimited warning messages.

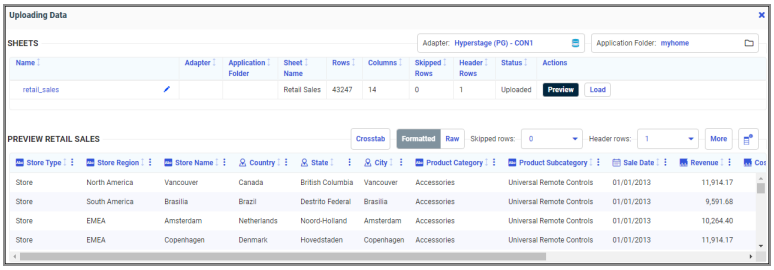
These load options are available when uploading files in the Simple Mode or the Advanced Mode.

Process Format Conversion Errors in Simple Mode

Procedure

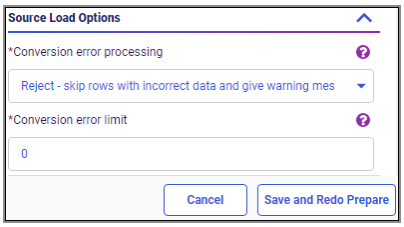
1. Upload a desktop file using Get Data. For more information, see Uploading Data Files.

   The Uploading Data page opens, as shown in the following image.



2. Click **More**.

   The More File Options dialog opens. Under Source Load Options, the conversion error options display, as shown in the following image.



   You can select **Reject** or **Ignore** from the Conversion error processing dropdown menu. You can also enter a value in the Conversion error limit field.

3. Click **Save and Redo Prepare** to save your changes.

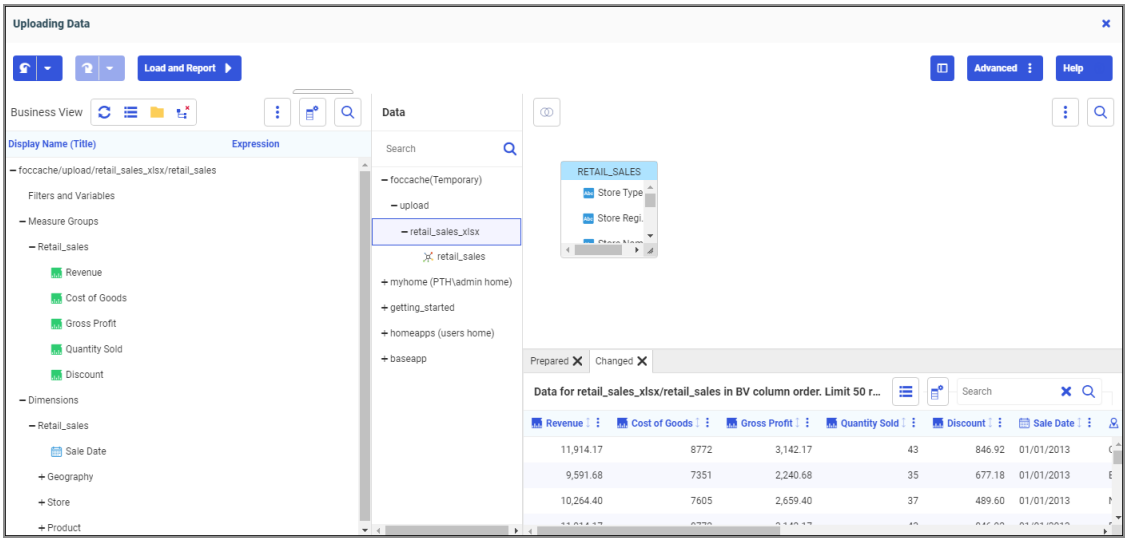
Process Format Conversion Errors in Advanced Mode

Procedure

1. On the WebFOCUS Hub, click the **plus** menu, select **Get Data (Advanced)**, click a desktop file type, and then select a file to upload, or, on the WebFOCUS Home Page, click the **plus** menu, click **Prepare and Manage Data**, click **Get Data**, click **Advanced**

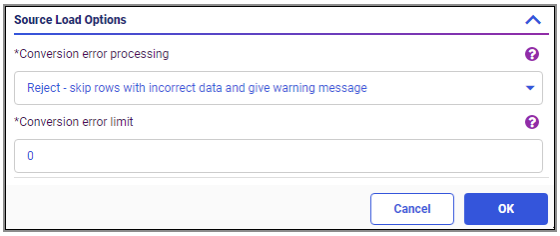
Mode, click a desktop file type, and then select a file to upload.

The Uploading Data page opens, as shown in the following image.



2. Click the **Advanced Options** vertical ellipsis.
3. From the menu, select **Load Options**.

   The Load Options dialog opens. Under Source Load Options, the conversion error options display, as shown in the following image.



   You can select **Reject** or **Ignore** from the Conversion error processing dropdown menu. You can also enter a value in the Conversion error limit field.

4. Click **OK** to save your changes.

Pivoting Data

Some data files may contain repeating values, such as sales figures for a series of years. When uploading a spreadsheet or delimited file with columns of repeating values, you can preview these columns and transform them into rows.

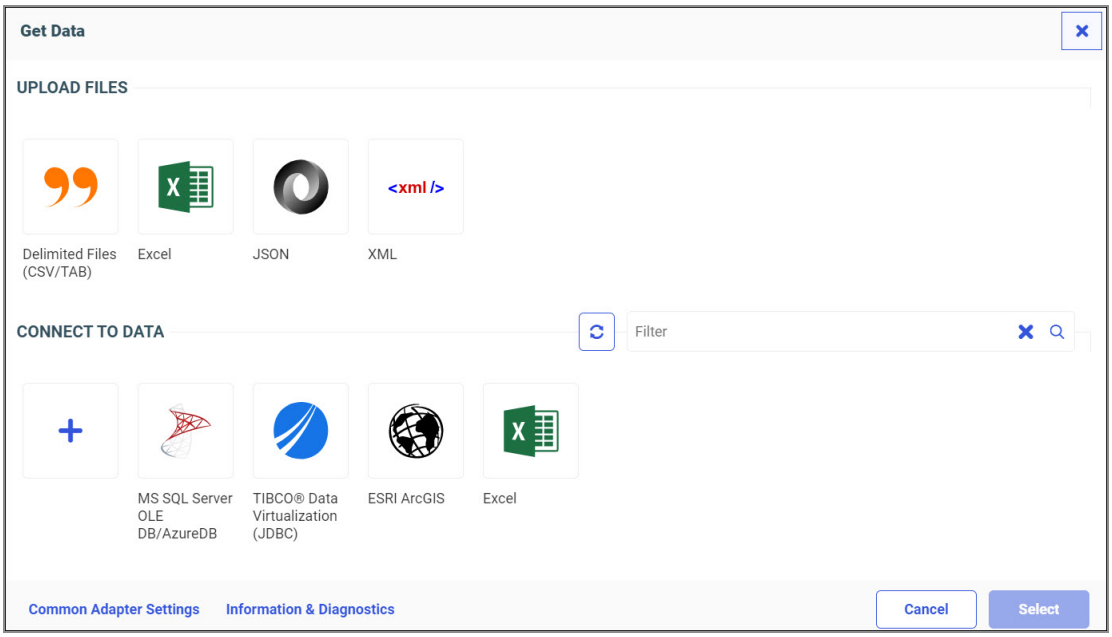
Pivot Columns Into Rows

Procedure

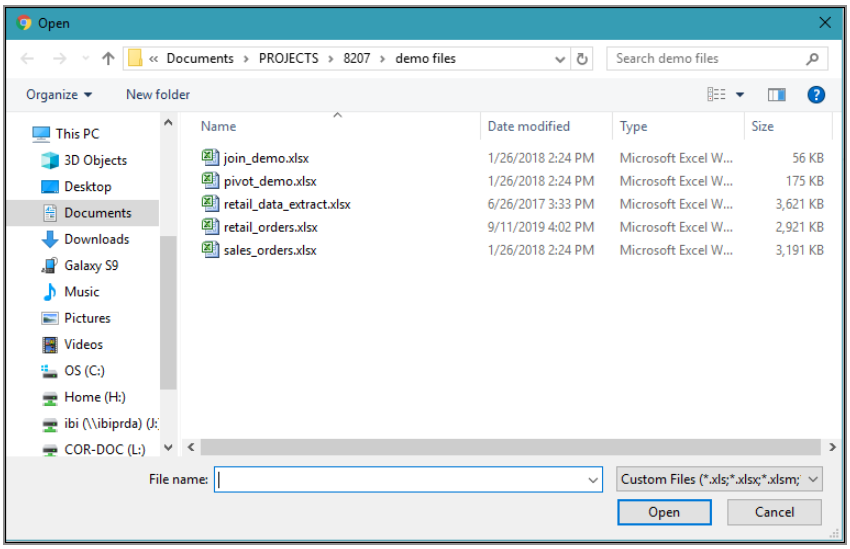
1. On the WebFOCUS Hub, click the plus menu, and then click **Get Data**, or, on the WebFOCUS Home Page, click the Get Data button

.

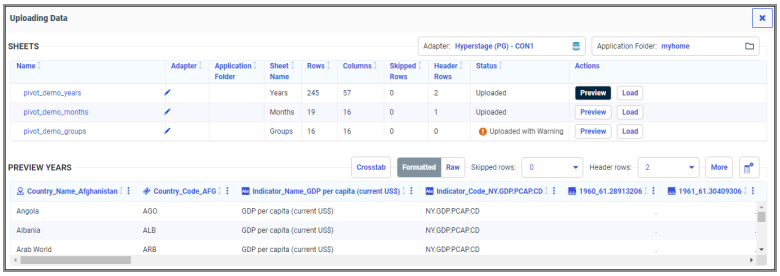
   The Get Data dialog opens, as shown in the following image.



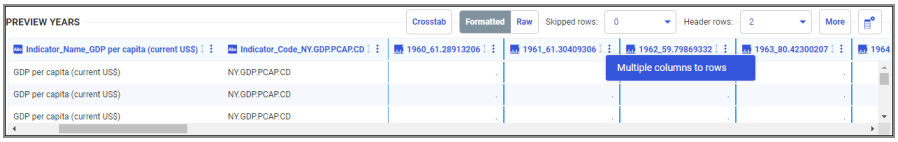
2. Under UPLOAD FILES, click your Delimited or Excel file type for upload. An Excel file can contain a single worksheet or multiple worksheets. A delimited file is an individual data source.
3. In the Open dialog for your operating system, which is shown in the following image, select the file that you want to upload, and then click **Open**.



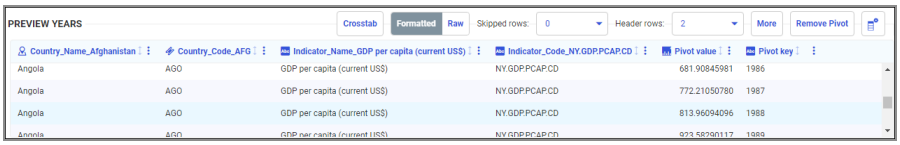
This opens a preview, as shown in the following image. In this example, we are showing a multi-worksheet Excel file. The previewed worksheet contains columns for each year from 1960 to 2012.



4. To multi-select all the year columns, click inside the first year column, hold down the Shift key, and click inside the last year column.
5. Click the menu button in any of the selected year columns, and click **Multiple columns to rows**, as shown in the following image.

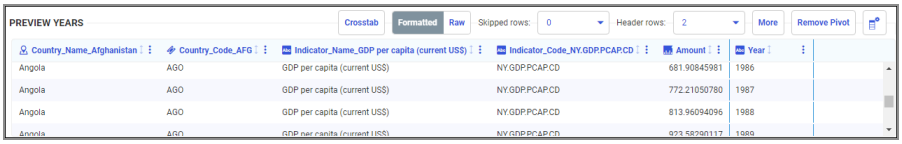


The repeating year columns now display as rows, as shown in the following image.



6. Click the menu button in the Pivot Value column, click **Rename**, and type a new column title in the dialog that reflects the numeric cell you are describing. For example: Amount.
7. Click **OK**.
8. Click the menu button in the Pivot key column, click **Rename**, and type a new column title in the dialog that reflects the numeric cell you are describing. For example: Year.
9. Click **OK**.

   The column titles are renamed, as shown in the following image.

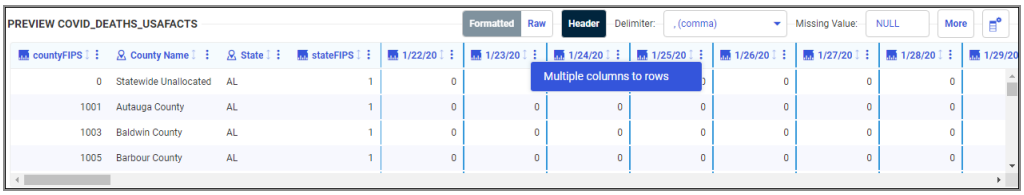


   To revert your pivoting changes, click **Remove Pivot**.

Pivot Columns with Date Headers

If the repeating columns have headers that are dates, the fields are recognized as date values when pivoted into rows, so you can report from the table using date functions.

An uploaded data file with selected repeating columns that have date headers is shown in the following image.



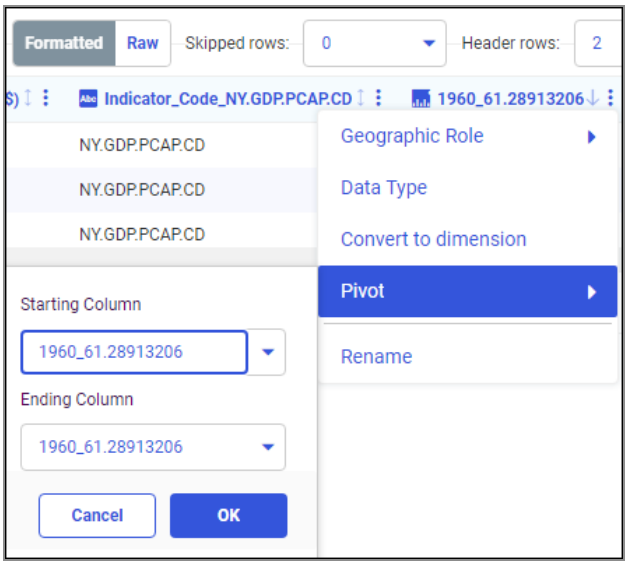
Select Columns to Pivot Using the Context Menu

From the preview page, you can easily select columns to pivot using the context menu.

Procedure

1. Click a column context menu icon ⋮.

   The context menu opens, as shown in the following image.



2. Hover over the **Pivot** option.
3. Click the **Starting Column** field dropdown arrow.
4. Select the starting column of your pivot column range.
5. Click the **Ending Column** field dropdown arrow.
6. Select the ending column of your pivot column range.
7. Click **OK**.

   The context menu closes, and the sheet preview refreshes to show the resulting pivot value and key columns.

Connecting to Data Files

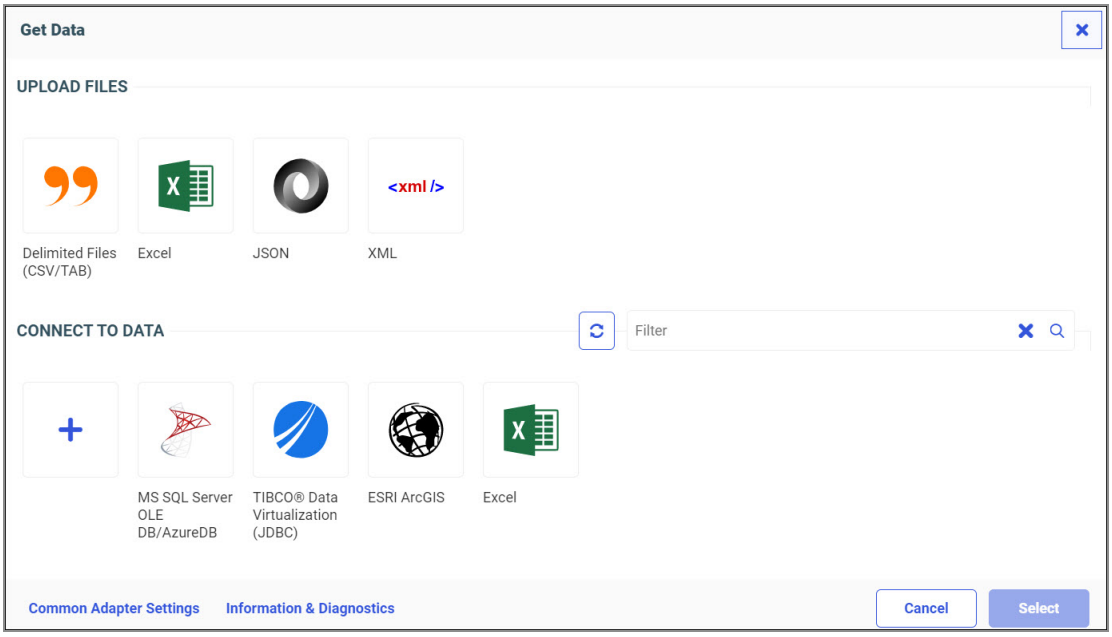
You can connect to various data sources and create synonyms, configure new adapters, add connections to existing adapters, or change adapter connections. Then use your connected data for content creation or analysis.

Connect to Data Files

Procedure

1. On the WebFOCUS Hub, click the plus menu, and then click **Get Data**, or, on the WebFOCUS Home Page, click the **Get Data** button Get Data.

   The Get Data dialog opens, as shown in the following image.

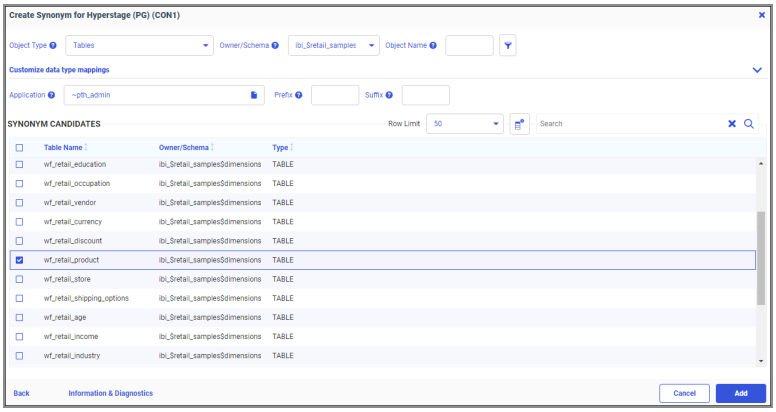


2. Under CONNECT TO DATA, click a configured adapter.

   The Configure Connections dialog opens, as shown in the following image.

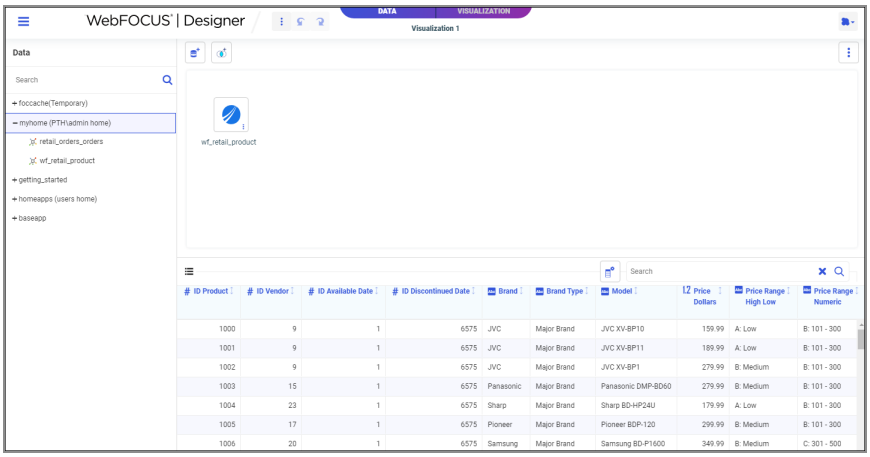
3. Double-click an available connection.

   The Create Synonym dialog opens, as shown in the following image.



4. Select a data source for synonym creation.
5. Click the **Add** button.

   Your synonym opens in WebFOCUS Designer, where you can create content. Click the **DATA** tab to view your synonym, as shown in the following image.



Configure a New Adapter

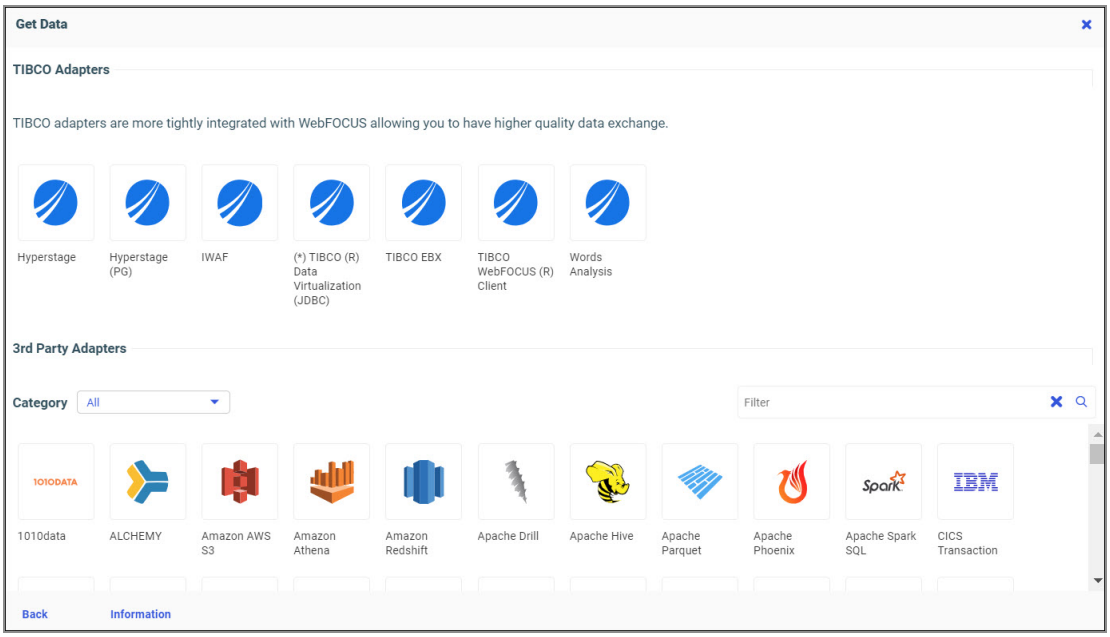
Procedure

1. Open the Get Data dialog.

   Depending on your version of WebFOCUS and your permissions, you may have the option to configure a new adapter.

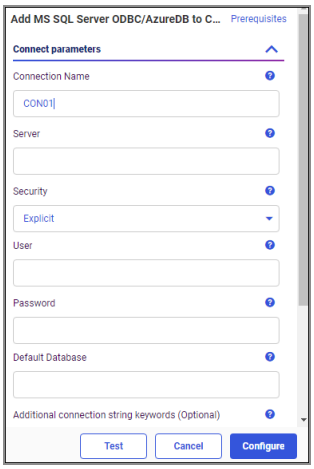
2. Under CONNECT TO DATA, click the New Connection icon +.

   The Available adapter dialog opens, as shown in the following image.



3. Right-click an adapter and click **Configure**.

   A parameters panel opens, as shown in the following image.



4. Enter your parameters in the panel.

   See the information specific for your adapter in the *ibi™ WebFOCUS® Adapter Administration* technical content.

5. Click **Test**, if available, to test your configuration.

6. Click **Configure**.

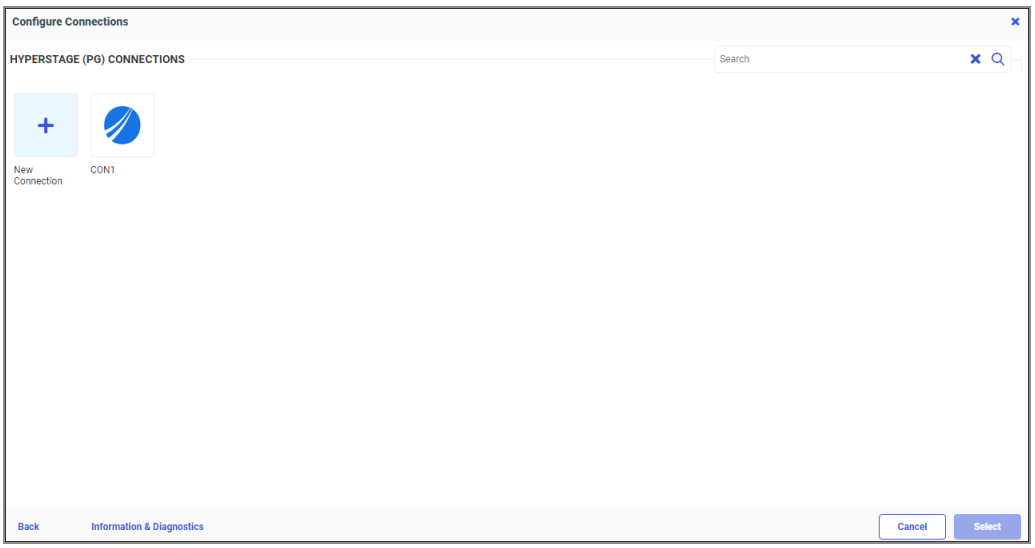
   Your configured adapter is displayed in the Get Data dialog.

Add a Connection

Procedure

1. From the Get Data dialog, under CONNECT TO DATA, click a configured adapter.

   The Configure Connections dialog opens, as shown in the following image.



2. Click the New Connection icon + .

   A parameters panel opens.

3. Enter your connection parameters.

   See the information specific for your adapter in the *ibi™ WebFOCUS® Adapter Administration* technical content.

4. Click **Test**, if available, to test your connection.

5. Click **Configure**.

   Your configured connection displays in the Configure Connections dialog.

Change a Connection

Procedure

1. From the Get Data dialog, under CONNECT TO DATA, click a configured adapter.

The Configure Connections dialog opens, as shown in the following image.

2. Right-click a connection.
3. Select **Properties** from the shortcut menu.

   A parameters panel opens.
4. Change your connection parameters.

   See the information specific for your adapter in the *ibi™ WebFOCUS® Adapter Administration* technical content.
5. Click **Test**, if available, to test your connection.
6. Click **Configure**.

   Your changed connection is displayed in the Configure Connections dialog.

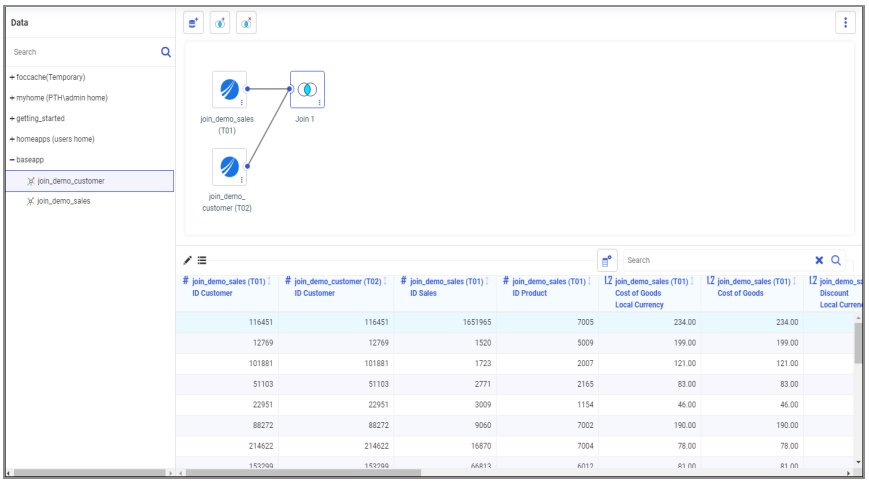
Joining Data

You can Join data sources from the data tab in WebFOCUS Designer, and then use your joined data to create new content from within the Visualization tab.

The joined data structure is not applied permanently to the metadata. This allows you to virtually join multiple data sources as if they were a single data source, from which you can report in a single request. This can increase the number of relevant fields available for use in your content, giving you an expanded selection of data specific to your charting purposes.

The Join is created when fields that match in your original data source and second data source are identified. For example, you can Join two data sources on a Join field of ID Product, using just one data source in your chart. You can then create content using your Joined data source.

The following image shows an example of joined data in WebFOCUS Designer.



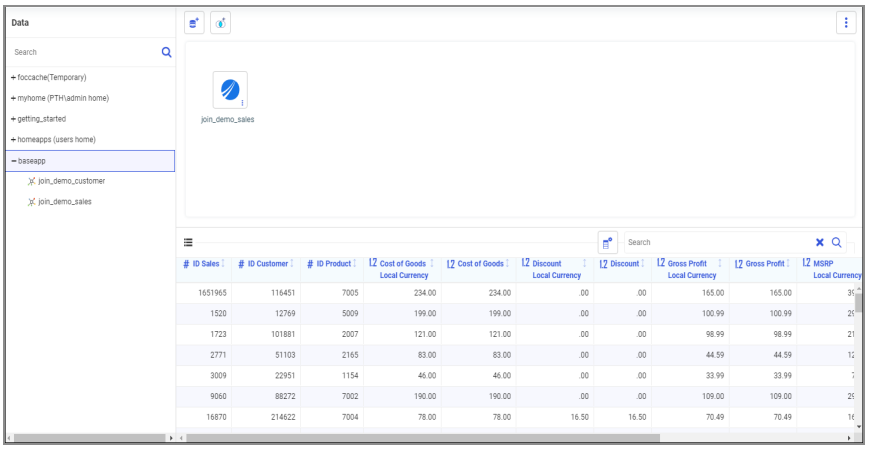
Create a Basic Join

You can Join data sources based on shared fields to enhance the data available to you, and then create charts based on the joined data source.

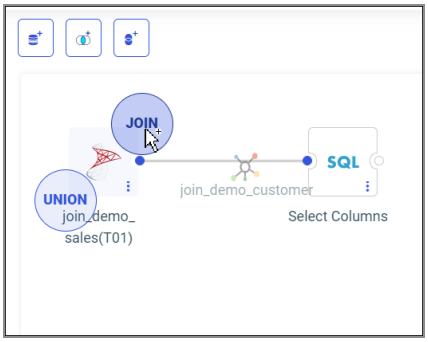
Procedure

1. From the WebFOCUS Designer **Visualization** tab, click the **Data** tab.

   Your data source displays as a synonym on the Data tab canvas, and sample data displays in a tabular format similar to a spreadsheet, as shown in the following image.

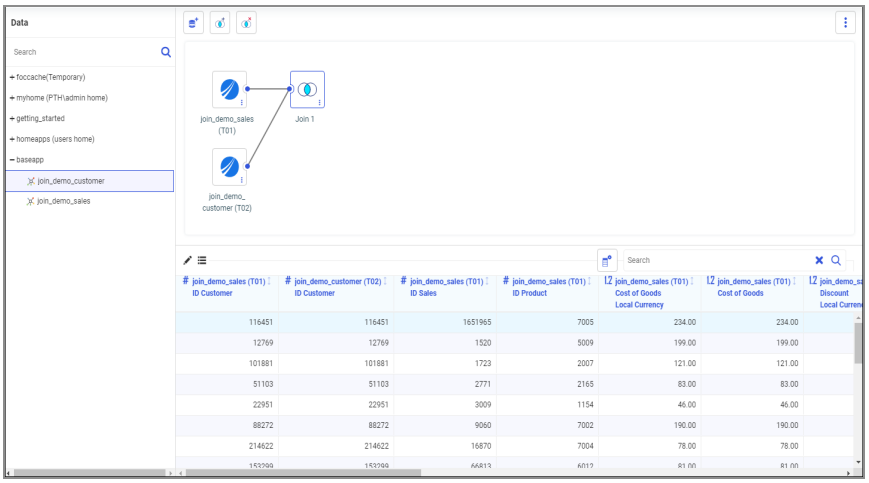


2. From the Data panel, drag a synonym to the Join bubble of the synonym to which you want to connect it, as shown in the following image.



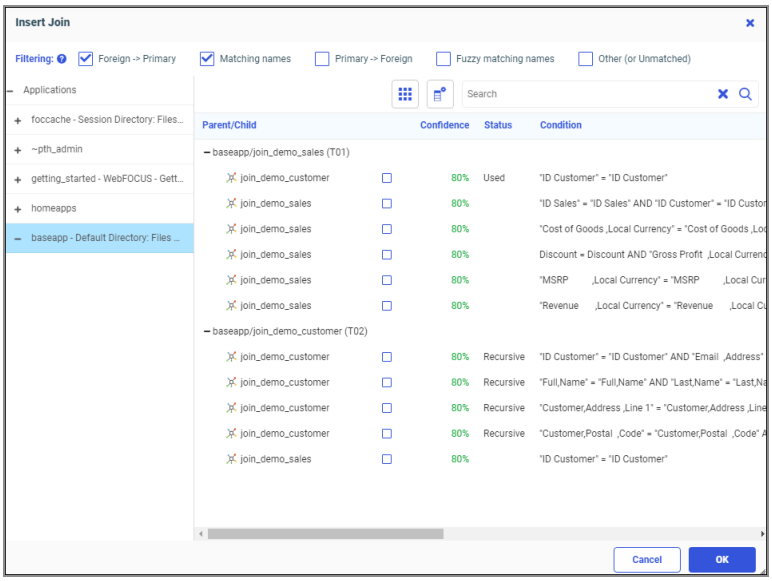
> **Note:** You can also drag a synonym to the Union bubble. While a join adds columns to existing rows based on a relationship between columns in the two data sources, a union adds new rows by combining the results of two queries that have a common domain and number of columns. For more information about unions, see *Creating a Data Flow* in the *ibi™ WebFOCUS® Reporting Server Administration* guide.

A Join object is added between the two synonyms on the canvas as shown in the following image.



The canvas provides the following toolbar options:

- **Get Data.** Opens the Get Data dialog, where you can select additional data sources to be joined with your original data source.
- **Insert Join.** Displays potential Join candidates from a relational database, including confidence scores, as shown in the following image.



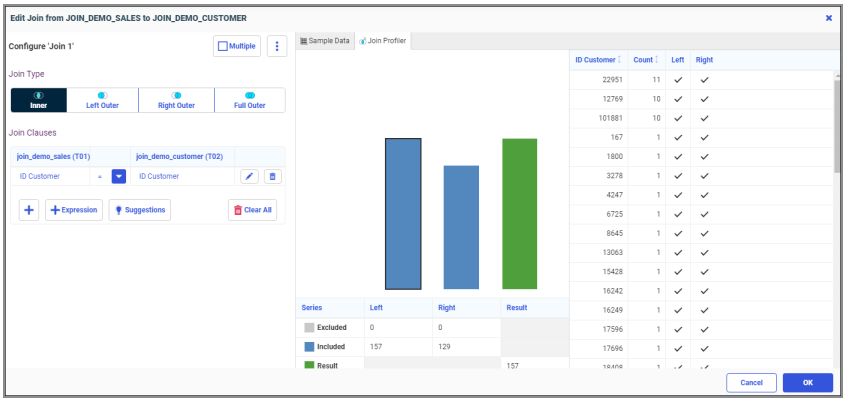
- **Clear Join.** Removes the Join from the data flow. You can also right-click the Join object or a synonym joined to the original data source, and click **Delete** to remove the Join.

Note: Before removing a recursive Join (when a table is joined to itself) you must remove any fields with active content from the first instance of the table.

The canvas provides the following menu options:

- **Flow view.** An icon represents each synonym, and an icon that displays the type of join represents each join.
- **Model view.** A list box represents each synonym, and a vector between the joined synonyms represents each join.
- **Arrangement.** Select a Layout option to define the spacing between objects on the canvas, or click **Auto Arrange** to reset the display of objects in the canvas to the default arrangement:
  - **Vertically spread out.**
  - **Vertically compressed.**
  - **Vertically compressed with long H-space.**
  - **Default.**
  - **Auto Arrange.**
- **More options.** Sets the following Join defaults:
  - **Insert child segment with snowflakes.** No is the default, which inserts only the segment selected. You can select **Yes** to insert the selected segment and all of its descendants.
  - **Display full component names.** Yes is the default. Full component names are field names qualified/prefixed with the synonym and segment name.
  - **Use Monotree.** Yes is the default. The monotree view displays the current folder in the Data panel and provides navigation to other folders. Select **No** to display all folders in a traditional tree view.
  - **Show undo/redo button with history.** No is the default. Select **Yes** to display the history button.

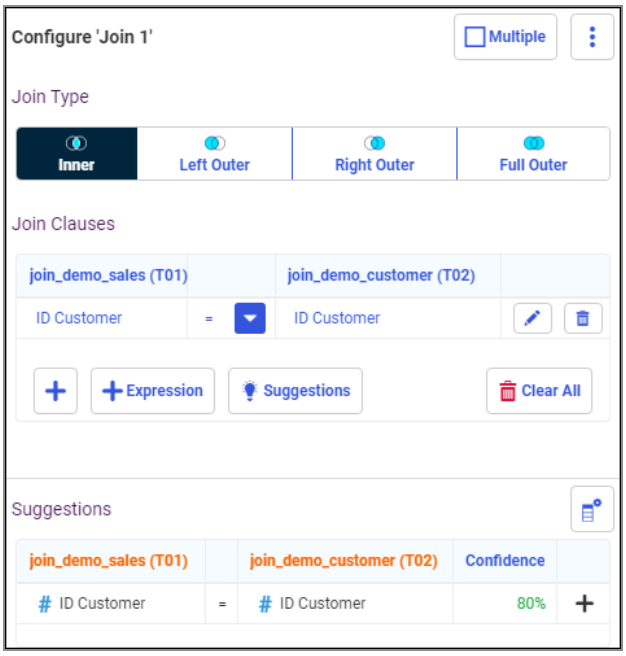
Click the pencil icon to display a Join configurator and data profiler, as shown in the following image.



Using the Join configurator, you can change the join type or change expressions and operators. Check the Multiple checkbox to indicate a one-to-many Join. The following Join types are available:

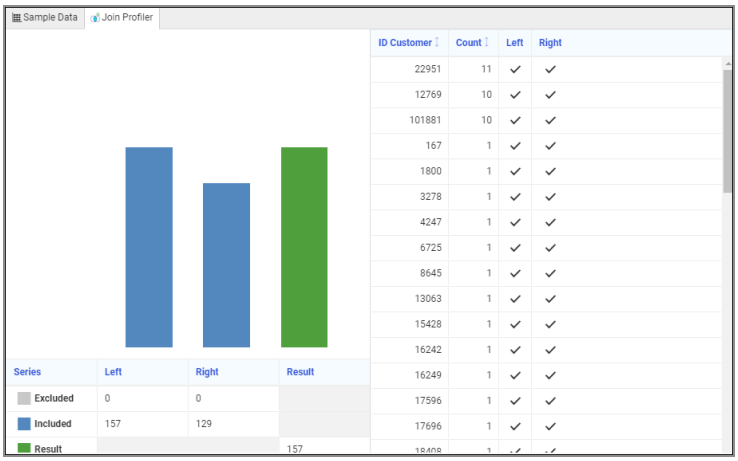
- **Inner.** Returns only records where the selected join fields match between the left-side table and the right-side table. If there are no matches, no records are returned.
- **Left Outer.** Returns all records from the left-side table, and only matched records from the right-side table.
- **Right Outer.** Returns all records from the right-side table, and only matched records from the left-side table.
- **Full Outer.** Returns all records, matched and unmatched, from the left-side table and the right-side table. This type of Join can potentially return very large result-sets and can take longer to run.

Click **Suggestions** to display Join Suggestions, including a confidence score based on any database relationships and the number of matching names in the fields, as shown in the following image.



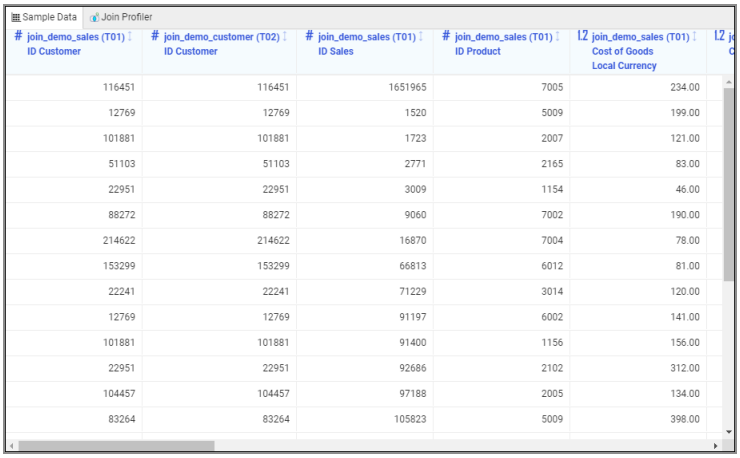
Click the plus sign [+] to add the suggestion to the join pair list.

In the **Join Profiler** tab, a join analyzer chart displays the number of matching values from each part of the join and the total number of values included in the data source as a result of the join, and a key fields grid showing LHS and RHS match states, as shown in the following image.



You can click the table bars or numbers to display the matching fields in the report, and then click the **Clear selections** icon [ ] to clear the matches and return the report to show all values.

In the **Sample Data** tab, the values for the field being joined in each synonym are displayed, as shown in the following image.


Sample Data | Join Profiler

join_demo_sales (T01) ID Customer	join_demo_customer (T02) ID Customer	join_demo_sales (T01) ID Sales	join_demo_sales (T01) ID Product	join_demo_sales (T01) Cost of Goods Local Currency	j... C...
116451	116451	1651965	7005	234.00	
12769	12769	1520	5009	199.00	
101881	101881	1723	2007	121.00	
51103	51103	2771	2165	83.00	
22951	22951	3009	1154	46.00	
88272	88272	9060	7002	190.00	
214622	214622	16870	7004	78.00	
153299	153299	66813	6012	81.00	
22241	22241	71229	3014	120.00	
12769	12769	91197	6002	141.00	
101881	101881	91400	1156	156.00	
22951	22951	92686	2102	312.00	
104457	104457	97188	2005	134.00	
83264	83264	105823	5009	398.00	

To create content from your Join, click the **Visualization** tab and then click **Save** to save your content.

Creating HOLD Files

A HOLD file is the stored output of an ran extract, that you can use as the source for WebFOCUS reports and visualizations. A HOLD file can be used immediately within the same procedure that creates it, or selected as the data source for new reports and visualizations.

A HOLD file is valuable when you want to do the following:

- Extract fields from a large data source for faster and more efficient retrieval in subsequent requests. This reduces processing time, enabling you to create reports and charts rapidly against a smaller, more specialized data set. This improves efficiency while giving you the flexibility that you need when working with smaller subsets of your data.
- Store virtual field values or summary values calculated in one request for further processing in another request. This allows you to reuse calculated values, decreasing the effort required to recreate certain scenarios.

Create HOLD Files in ibi WebFOCUS Designer

You can use WebFOCUS Designer to create and save HOLD files to be used immediately within your current visualization or saved as new data sources for future reports and visualizations.

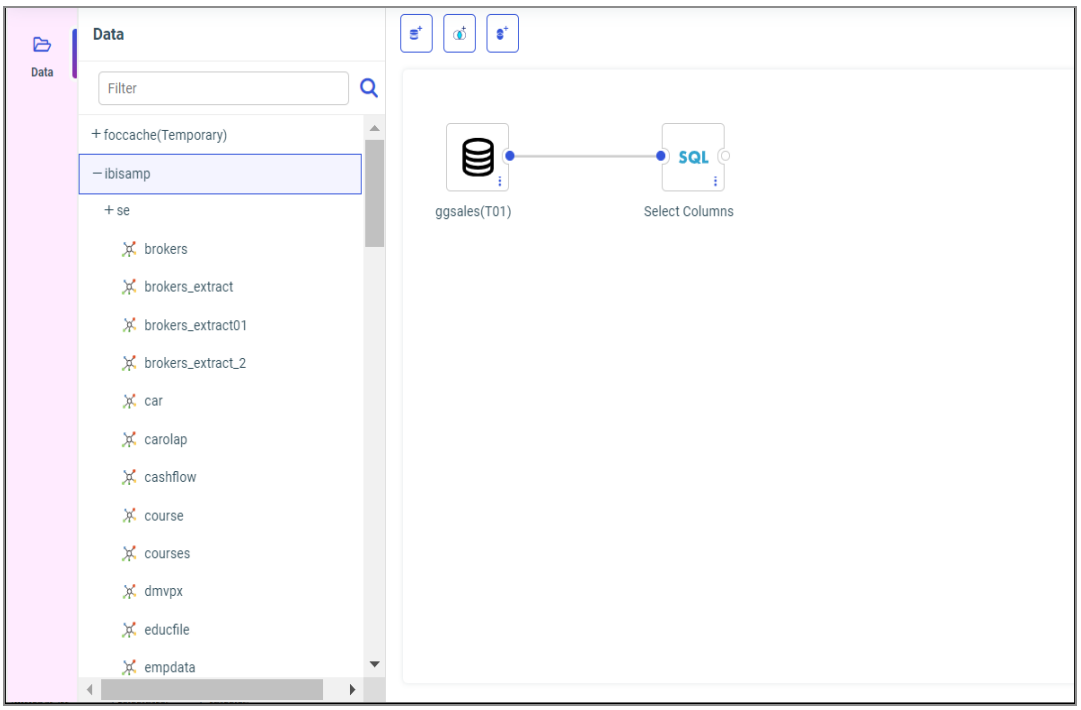
Procedure

1. From the Hub page, click the plus menu.
2. Click **Create Visualizations**.

   The Select Data Source dialog opens.
3. Select a data source.
4. Click **Prepare/Extract Data**.

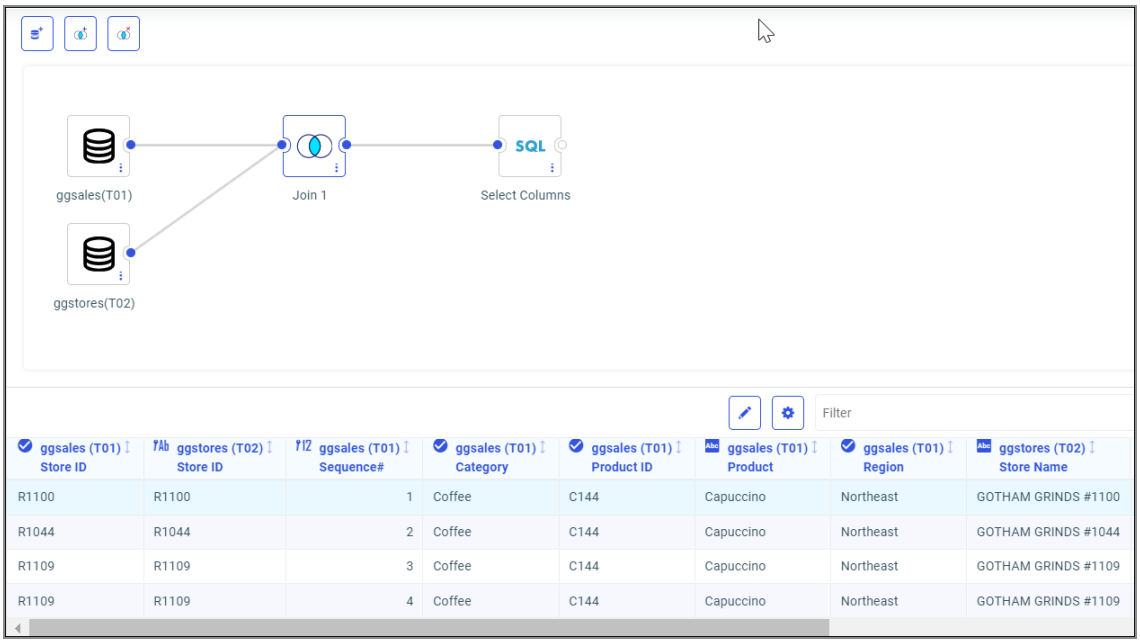
   Note: You can click **Create Visualization** to display your data in WebFOCUS Designer's Visualization tab. Then click the **Data** tab to prepare or extract data.

   Your data flow displays on the Data tab canvas, as shown in the following image.



5. Add an additional data source to the flow.

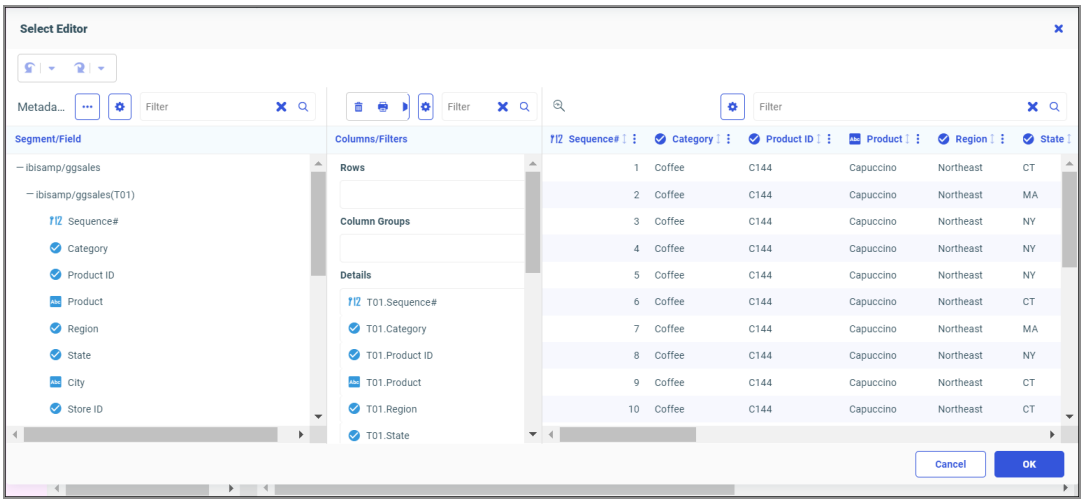
   For example, to create a Join, drag another data source from the Applications tree on top of your original data source on the canvas. The resulting Join is shown in the following image.



   For more information on Joins, see Joining Data.

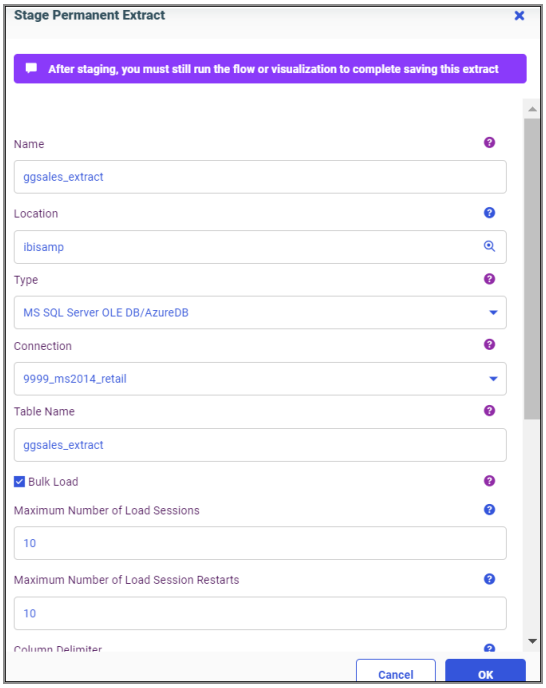
6. Right-click on the **Select Columns** node.
7. Select **Edit**.

   The Select Editor dialog opens, as shown in the following image.



8. Edit your data as needed.
9. Click **OK**.
10. Right-click on the **Select Columns** node.
11. Select **Stage Permanent Extract (Target)**.

    The Stage Permanent Extract dialog opens, as shown in the following image.



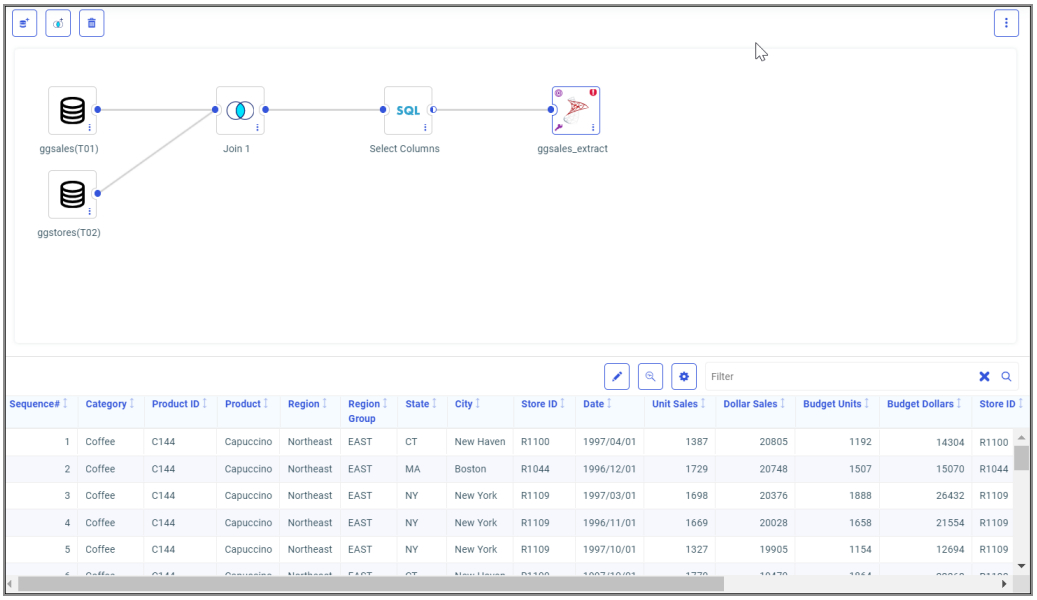
You can select the properties of your HOLD file, including the application directory

for storage, the name of the extract, and the file type of the extract.

HOLD files can be saved permanently for future and repeated use, or saved temporarily for current use. This gives you the flexibility to use and store HOLD files as needed, based on how you want to use the files that you create. If you select **Create Session Extract**, the HOLD file is saved temporarily to the foccache directory, and is useable for the current session only. For any saved visualization specifying a HOLD file extract, the HOLD file is recreated any time that visualization is ran.

12. Click **OK**.

    Your changes have been made, and your staged extract displays in the flow, as shown in the following image.



    You must run the flow to finish creating the extract.

13. Click the **Run** arrow icon.

    Your HOLD file is created and saved to your chosen location. It can be used immediately on the Visualization tab, or selected from your list of data sources for future reports and visualizations.

> **Note:** You can switch back and forth between the Data and Visualization tabs. Modifying your data flow may change or delete any associated visualizations. For more info on creating visualizations, see Creating Content in ibi WebFOCUS Designer.

Editing Metadata

Metadata is data about data, and describes the characteristics of your data sources, or synonyms. Metadata can be generated whenever data is created, acquired, added to, deleted from, or updated.

Depending on your version of WebFOCUS and your permissions, you may have access to additional metadata options, so you can edit previously created synonyms.

You can edit previously created synonyms in the following ways:

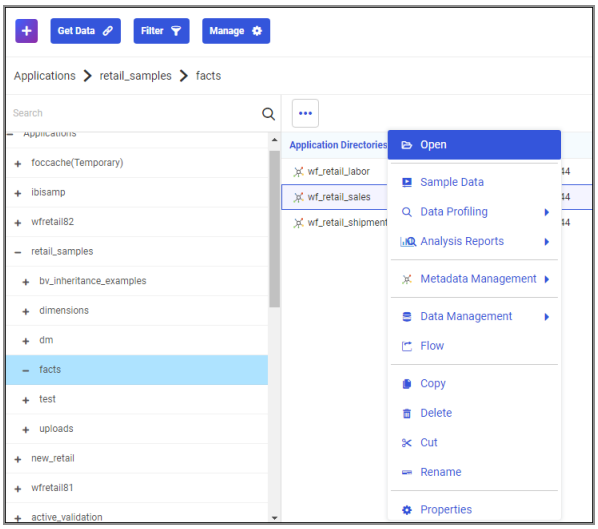
- From the WebFOCUS Hub, click **Applications Directories**, or, from the WebFOCUS Home page, click the plus sign , and then click **Prepare and Manage Data**.

The Applications page opens, from which you can edit your synonym, or choose from other options.

Edit a Metadata Object

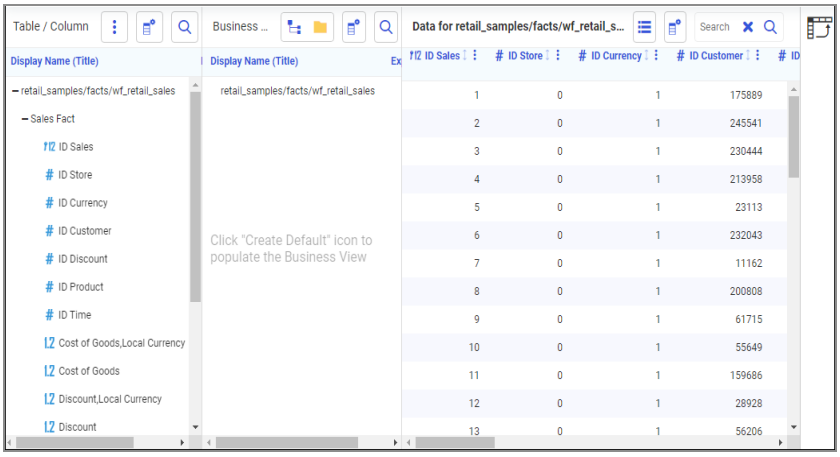
Procedure

1. From the Applications page, in the Application Directories tree, click a folder to expand it, then right-click on a procedure or metadata file in the file panel and select **Open**, as shown in the following image using a synonym as an example object.



> **Note:** to edit as text, select **Metadata Management**, and then select **Edit as Text** or **Edit Access File as Text**.

The Synonym Editor opens, where you can modify your synonym, as shown in the following image.



2. Make edits to the synonym, as needed.
3. To save your synonym, click the upper-left Tool Menu icon and select the **Save** menu option.
4. To close the Synonym Editor, click the upper-left Tool Menu icon and select the **Close** menu option.

Creating Folders

When you are working within a WebFOCUS Business View panel, you can edit your data by selecting from folder and field shortcut menu options. These options are also available in the Table/Column and Output views.

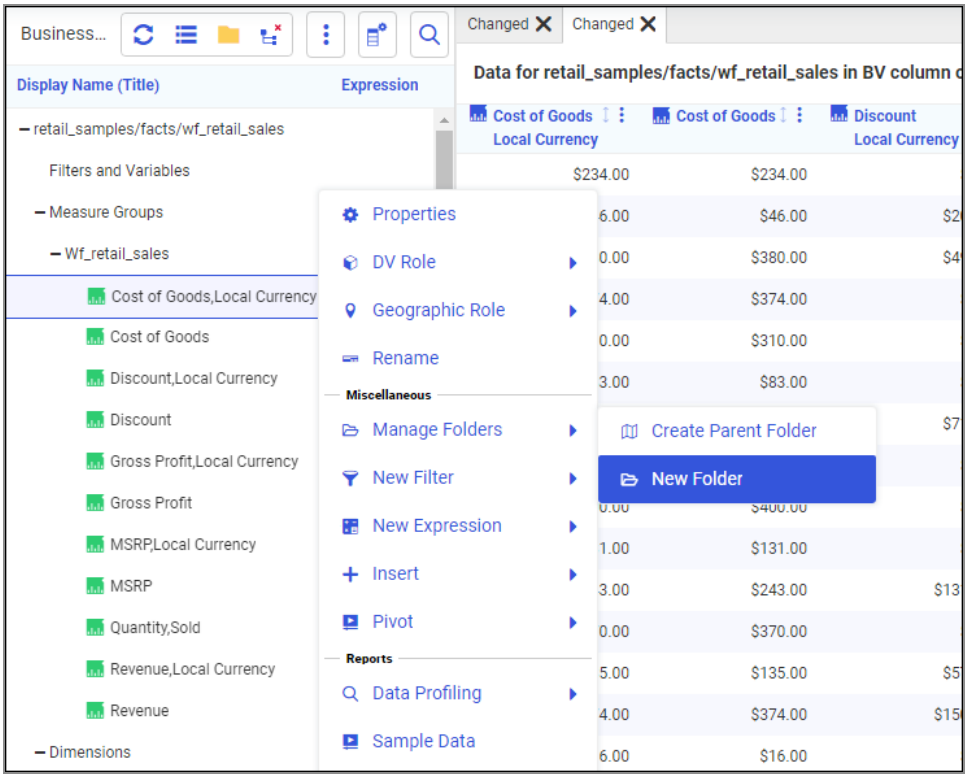
You can create folders to organize your data. Folders function as segments to provide a view of the synonym, and define the accessible fields and their relationships. Folder relationships are the same as segment relationships, with parent folders, child folders, and sibling folders. Once you create a folder, you can add data fields and assign roles. Synonym folder structures can be predefined or flexible.

Predefined folder structures are categorized as Measure Groups, Dimensions, Hierarchies, and Attributes, and are created by default when using the WebFOCUS Upload or Connect

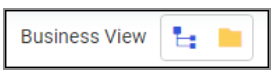
to Data workflows. In a predefined folder structure, a Measure Group contains measures or facts that are numeric values, such as Gross Profit or Cost of Goods Sold, that you may want to aggregate. All numeric values that can logically be summed can be categorized as Measures. All other fields are categorized as Dimensions, Hierarchies, or Levels.

Flexible folder structures allow you to insert any number of folders at any level to represent the Business need. A folder can contain any type of field categorized as a Measure or Dimension. However, it is good practice to keep different field types in separate folders.

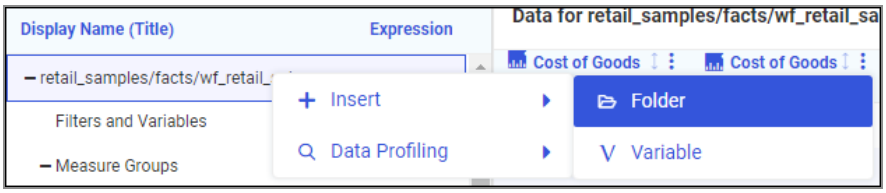
Within a WebFOCUS Business View panel, you can create a folder by right-clicking a folder or field, pointing to **Manage Folders**, and then clicking **New Folder**, as shown in the following image of a predefined folder structure.



When editing or creating a synonym, you can click the icons at the top of the Business View panel to create a populated, predefined folder structure, or an unpopulated, predefined folder structure, as shown in the following image.

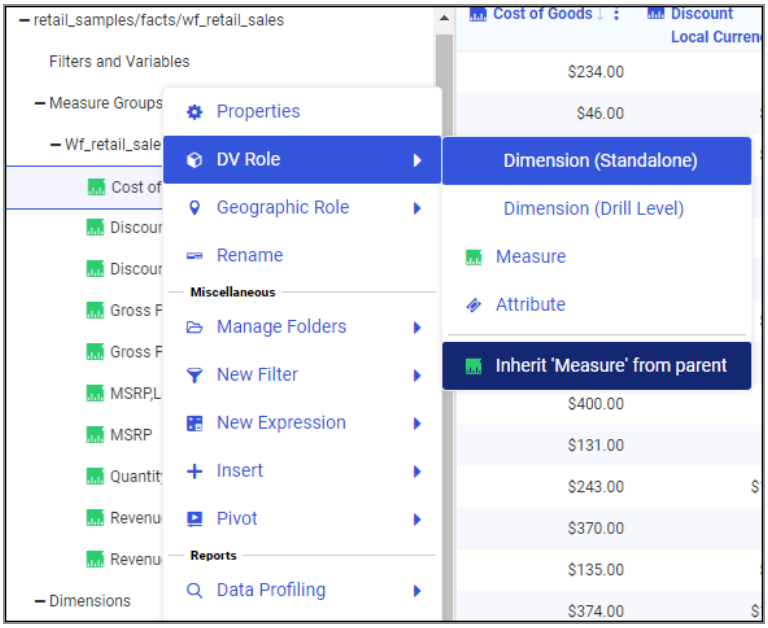


Note: You can start to create a new flexible folder structure by right-clicking the synonym name path, pointing to **Insert**, and then clicking **Folder**, as shown in the following image.



Assigning DV Roles

Categorization can be assigned using the DV Role option. When editing a synonym within a WebFOCUS Business View panel, you can assign a DV role to a folder or field by right-clicking the folder or field, clicking **DV Role**, and then clicking a DV Role option, as shown in the following image of a predefined folder structure.



You can explicitly assign a DV Role to a folder or field, or have it automatically inherit a role from its parent. If you explicitly assign a DV Role, that role moves with the object when dragged to a different location within the Business View structure. If you do not explicitly assign a DV Role, the role changes when the object is dragged under a new parent. However, if the object is dragged under a parent with a field with a Drill Level role, it inherits that role.

A folder can only have one drill level field hierarchy. However, you can use the same fields in multiple hierarchies by placing each hierarchy in a separate folder. A folder with a drill level hierarchy is not limited to the hierarchy and can contain other fields with different DV Roles.

You can assign the following DV Roles.

- **Dimension.** A dimension is a way to categorize data or sort output. You can use a dimension to analyze and compare measures. Dimension fields are generally alphanumeric fields, such as Product.

  Dimension fields can be organized into hierarchies to define the relationships between them, and provide information for the AUTODRILL feature. For example, a Geography hierarchy can contain the Continent, Country, State, and City fields. When AUTODRILL is turned on, automatic drilldown links are created in the report or chart output.

  A dimension field, when double-clicked or dragged onto the report or chart canvas in the WebFOCUS tools, is automatically added to the request as a vertical (BY) sort field. A folder can be assigned the role Dimension. A field can be assigned the role Dimension (Standalone) or Dimension (Drill Level). When it is assigned the role Dimension (Drill Level), it becomes part of a hierarchy, where the levels depend on the order of the fields in the folder. You can also define dimension fields that are not part of a dimension hierarchy.

- **Measure.** You can use a measure to aggregate data. A measure field, when double-clicked or dragged onto the report or chart canvas in the WebFOCUS tools, automatically be added to the request as an aggregated value (SUM), if it is numeric. A folder or field can be assigned the role Measure.

- **Attribute.** An attribute is a field or collection of fields that add additional information about a dimension. An attribute field, when double-clicked or dragged onto the report or chart canvas in the WebFOCUS tools, automatically be added to the request as an aggregated value (SUM), if it is numeric, or as a vertical sort field (BY), if it is alphanumeric.

- **Folder.** A folder is a virtual segment in a Business View. It can be assigned the roles Dimension, Measure, or Attribute.

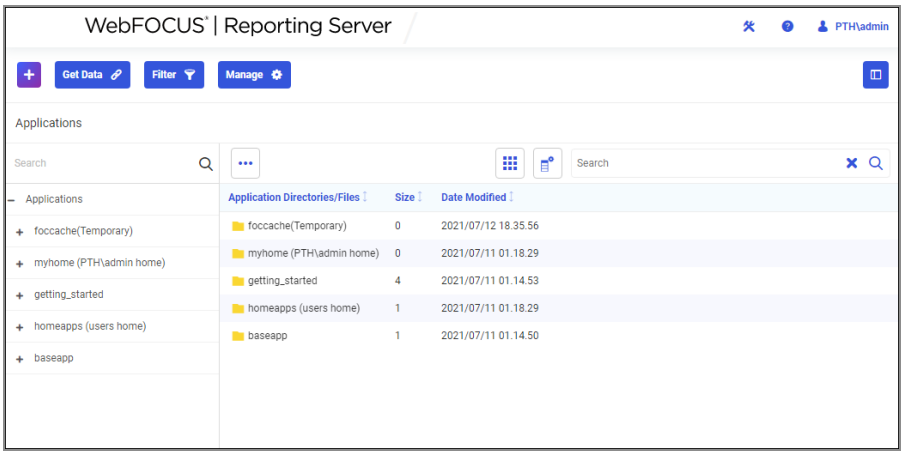
  > **Note:** When a folder is inserted as a child of a field, the attribute PARENT_FIELD describes this relationship. By default, such a folder and its fields are assumed to have the Attribute role.

Preparing and Managing Data

After uploading or connecting to data by clicking **Get Data** from the WebFOCUS Reporting Server browser interface, you can return to the WebFOCUS Reporting Server browser interface to prepare or manage more data, or if you choose, visualize your data in WebFOCUS Designer.

From the WebFOCUS Hub, click **Applications Directories**, or, from the WebFOCUS Home page, click the plus menu , and then click **Prepare and Manage Data**.

The WebFOCUS Reporting Server browser interface opens, as shown in the following image.

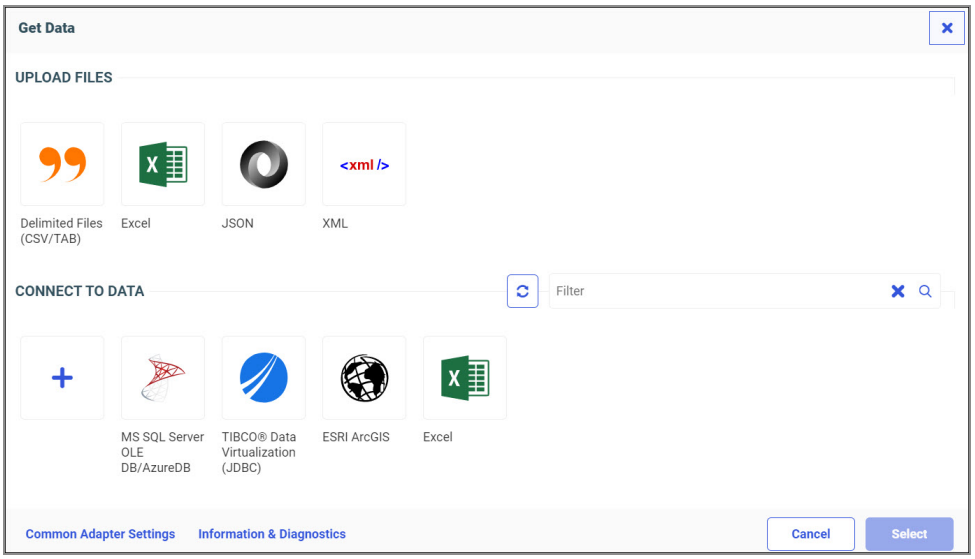


Upload Data from the ibi WebFOCUS Reporting Server Browser Interface

Procedure

1. From the WebFOCUS Reporting Server browser interface, click **Get Data**.

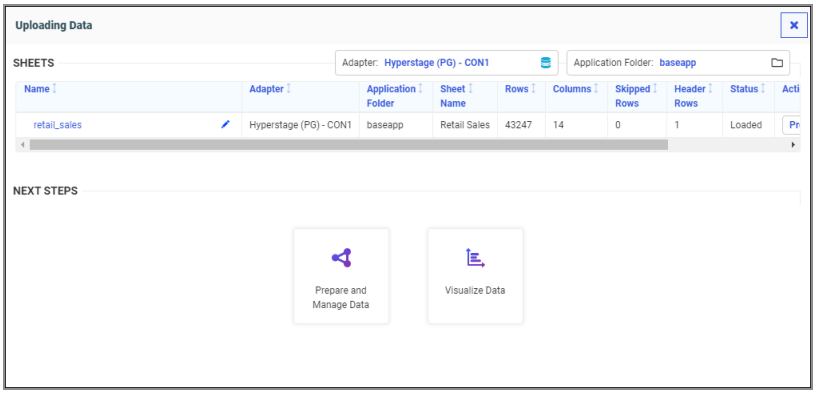
   The Get Data dialog opens, as shown in the following image.



2. Under UPLOAD FILES, click your upload file type.
3. In the Open dialog for your operating system, select the file that you want to upload, and then click **Open**.

   The Uploading Data preview page opens, and your file or worksheets are displayed.
4. Click **Load**.

   Your file or worksheet is loaded, as shown in the following image.



5. Click **Prepare and Manage Data** to return to the WebFOCUS Reporting Server browser interface and prepare or manage more data, or if you choose, click **Visualize Data** to open WebFOCUS Designer.

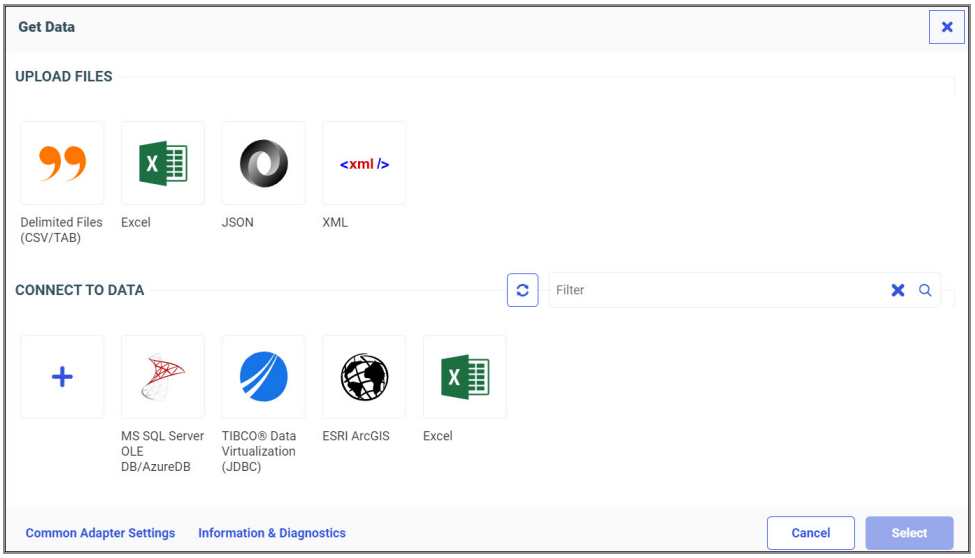
> **Note:**
> For more information, see Uploading Data Files.

Connect to Data from the ibi WebFOCUS Reporting Server Browser Interface

Procedure

1. From the WebFOCUS Reporting Server browser interface, click **Get Data**.

   The Get Data dialog opens, as shown in the following image.



2. Under CONNECT TO DATA, click a configured adapter.

   The Configure Connections dialog opens.

3. Double-click an available connection.

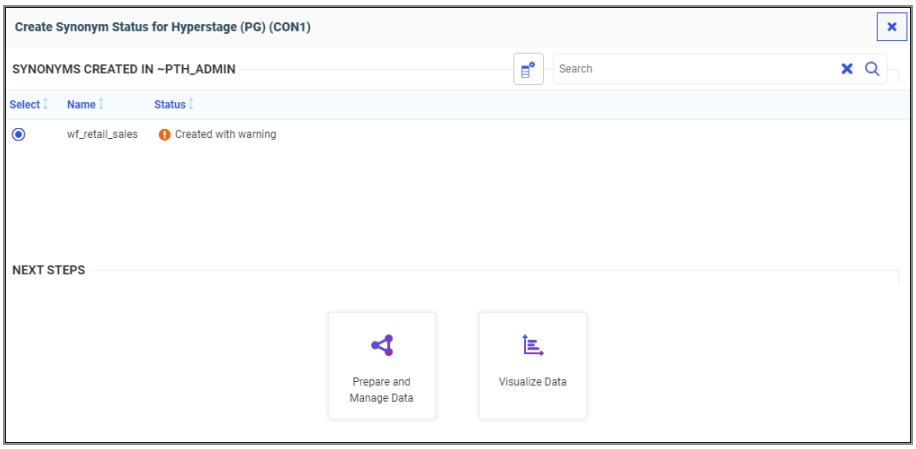
   The Create Synonym dialog opens.

4. Select a data source for synonym creation.

5. Click **Add**.

   An intermediate Create Synonym Status page opens, as shown in the following

image.



6. Click **Prepare and Manage Data** to return to the WebFOCUS Reporting Server browser interface and prepare or manage more data, or if you choose, click **Visualize Data** to open WebFOCUS Designer.

> **Note:**
> For more information, see *Connecting to Data Sources*.

Extending Metadata With Reporting Objects

With WebFOCUS Managed Reporting, a developer can easily transform complex views of data into simple objects labeled with common business terminology that every user can understand, such as Weekly Sales or Revenue. Developers create Reporting Objects that present available data using terms and formats meaningful to users. Users can then use Reporting Objects as templates for the creation of a wide range of reports and charts.

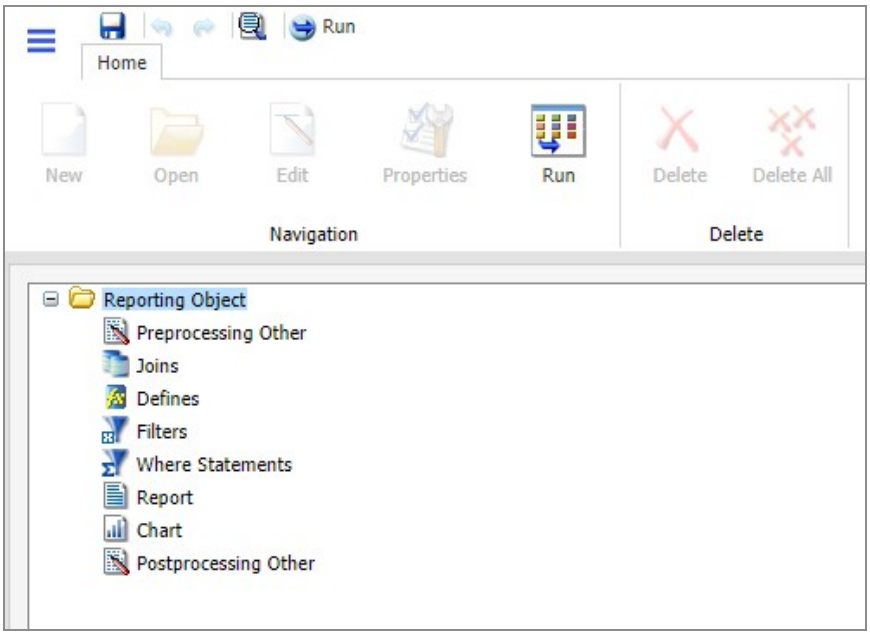
This topic describes Reporting Objects and how you can use them in WebFOCUS.

Reporting Object Tool

Reporting Objects are stored in folders in the tree within workspace folders under the Content folder. They can include selection criteria (WHEREs), JOINs, virtual fields(DEFINEs), filters, and other WebFOCUS statements, as well as reports or charts supplied as templates.

Note: A Reporting Object is not show in the repository when the user cannot functionally use the Reporting Object.

The browser Reporting Object tool allows you to create, edit, test, run, or delete a Reporting Object or its components. The main interface, as shown in the following image, consists of a static Quick Launch toolbar, a ribbon of context-sensitive options, and a window that displays the components of the Reporting Object with which you are working.



Reporting Object Tool Quick Launch Toolbar

The Reporting Object tool Quick Launch toolbar is a static menu whose commands apply to the entire Reporting Object, not simply to the particular component that you have selected. The following table describes each command in the Reporting Object tool Quick Launch toolbar.

Button	Shortcut Keys	Command	Description
≡	None	Reporting Object tool main menu	Launches a menu allowing you to Save, Save As, Run, and Exit.

Button	Shortcut Keys	Command	Description
	Ctrl+S	Save	Saves the Reporting Object.
	Ctrl+Z	Undo	Undoes the last action.
	Ctrl+Y	Redo	Repeats the last action.
	None	View code	Displays Reporting Object code in a read-only window.
	Ctrl+R	Run	Runs the Reporting Object.

Reporting Object Tool Ribbon

The Reporting Object tool ribbon is a menu whose commands apply to what you have selected, whether that is the Reporting Object as a whole, a particular component, or an individual example of a component. For example, a particular filter or filter group, if you have selected one, rather than selecting the entire Filter component.

The following table describes each command on the Reporting Object tool ribbon.

Button	Command	Description
	New	Creates a new join, DEFINE statement, filter, or WHERE statement.
	Open	Launches to create or edit a report or chart, or launches the appropriate tool to create or edit a join, DEFINE statement, filter, or WHERE statement.
	Edit	Opens component source code in the text editor.
	Properties	Renames the selected filter or filter group.

Button	Command	Description
	Run	Runs the selected component.
	Delete	Deletes the selected item.
	Delete All	Deletes all items of the type selected, for example, all WHERE statements, all filters in a particular group, or all filters in every group if the Filter component itself is selected.

Create a Reporting Object

Procedure

1. From the WebFOCUS Hub or WebFOCUS Home Page, open the Workspaces area.
2. Select the Workspace in which you want to create the Reporting Object, click the **+Create** button, point to **Data**, and click **Reporting Object**.

   The Reporting Object tool opens in a new browser window, with an Open dialog.
3. Select a Master File and click **OK**.

   The Reporting Object tool interface appears.

Edit a Reporting Object

From the WebFOCUS Hub or WebFOCUS Home Page, in the Workspaces area, right-click the Reporting Object and select **Edit**.

Note: Double-clicking the Reporting Object runs the Reporting Object rather than allowing you to edit it.

Save a Reporting Object

Procedure

1. Press Ctrl+S or click the **Save** icon on the Quick Launch toolbar.

   The Save dialog opens.

2. Type the name of the new Reporting Object in the Title field and click **OK**.

   From now on, clicking **Save** or pressing Ctrl+S saves the Reporting Object without launching the Save dialog.

Running a Reporting Object From the Browser

You can run a Reporting Object or any individual component of it from the browser. You can run a Reporting Object in the following ways:

- Select the object in the Reporting Object tool and click **Run**, or right-click the object and select **Run**.
- Right-click the Reporting Object in the Workspaces view and select **Run** or **Run Deferred**.

The Run option in the Reporting Object tool is enabled regardless of the setting of the *Only Run as a Deferred Report* property.

Expected Behavior of Running a Reporting Object

When you select and run a Reporting Object, the expected behavior is as follows:

- When you define a Report or Chart component, all components of the Reporting Object run.
- When you define a Report and Chart component, an HTML page opens, which enables you to select which component to run.
- When you define filters in a Reporting Object, an HTML page opens, which enables

you to select from the defined filters of the Reporting Object.

- When you define parameters in a report or chart and the Reporting Object Prompt for Parameters property is specified, an HTML page opens, which prompts you for parameter values.
- Reporting Object components are validated prior to run time. This means that errors are found and corrected more easily, since errors in individual components are detected prior to run time.
- If you attempt to run a Reporting Object that is created without using the Report or Chart component, you receive the message:

```
Your request did not return any output to display.
```

```
Possible causes:

- No data rows matched the specified selection criteria.

- Output was directed to a destination such as a file or printer.

- An error occurred during the parsing or running of the request.
```

Properties of a Reporting Object

From the WebFOCUS Hub or WebFOCUS Home Page, in the Workspaces area, you can view or edit the properties of a Reporting Object by right-clicking the object and selecting **Properties**. The Properties panel opens, displaying properties of the selected file.

Components of a Reporting Object

A Reporting Object may contain any of the following types of components, which are run in the order of precedence, as listed:

- Preprocessing Other (custom code that runs before all other components)
- Joins
- DEFINE statements

- Filters, when applicable
- WHERE statements
- Report or chart templates
- Postprocessing Other (custom code that runs after all other components)

Users using the Reporting Object to create a report do not see the DEFINE statements, WHERE statements, or JOIN commands defined in the Reporting Object, which are issued automatically every time a user accesses the Reporting Object. However, the report or chart components, including headers, footers, and styling features, are visible to authorized users who can use them to create their own customized report.

The filters defined in the Filter component are applied only if the user of the Reporting Object activates them when the report or chart based on the Reporting Object is run.

Preprocessing Other Component

The Preprocessing Other component contains custom code that must run before all other components. You can use the text editor in the component to create and edit code or to paste the code that you have copied from another application.

To create or edit a Preprocessing Other component, do one of the following:

- Double-click the component.
- Select the component and click **Edit** on the ribbon.
- Right-click the component and select **Edit**.

The Preprocessing Other text editor appears.

See *Creating Reports With ibi™ WebFOCUS® Language* for more information about using the WebFOCUS language to code procedures.

Note:

- Syntax and error checking are not performed on the commands that you type until the Reporting Object is run.
- Commands in the Preprocessing Other component should not return a displayable answer set.
- Previews in the Report component and the Chart component are disabled if the Preprocessing Other component contains the syntax:

```
-OLAP ON
```

To avoid this issue, enable OLAP through the Reporting Object properties instead of the Preprocessing Other component. For more information on the Reporting Object properties, see Properties of a Reporting Object.

Considerations for Amper Auto Prompting With the Preprocessing and Postprocessing Other Components

When using Amper Auto prompting, users may be prompted to supply amper variable values for parameters that the private user content does not reference. These scenarios are directly related to the internal processing of reports created using a Reporting Object.

Auto prompting considerations and expected behavior must be understood when referencing amper variables within a Reporting Object. For information on the Amper Auto prompting facility, see *Developing Reporting Applications*. The specification of values for the amper variables in the Reporting Object Other component using –DEFAULT, –DEFAULTH, or –SET commands assign a default value for amper variables in a report request to avoid a FOC error for not specifying a value. A consideration for –DEFAULTH and –SET is that Amper Auto prompting does not prompt for amper variables that have values assigned using –DEFAULTH and –SET.

Whether a user is prompted by the Amper Auto prompting facility for amper variables assigned a default value using the –DEFAULT command is dependent on the setting of the WebFOCUS Client configuration parameter, IBIMR_prompting. When IBIMR_prompting is set to XMLPROMPT, users are prompted for amper variable values, and default values are

displayed in fields in which the default values have been specified. When IBIMR_prompting is set to XMLRUN, users are not prompted for values when all amper variables have been assigned a default value. For more information on setting the IBIMR_prompting parameter, see *ibi™ WebFOCUS® Security and Administration*.

Creating a Reporting Object That Uses a HOLD File

Suppose that your company has a data warehouse and you need a Reporting Object that uses an extract from that data warehouse. In your Preprocessing Other component, you create a HOLD file from the data warehouse, and then you use that HOLD file in each Reporting Object component. You can clear the JOIN command and delete the HOLD file in the Postprocessing Other component so that it is not mistakenly used again the next time that the Reporting Object is used.

This task has the following steps:

1. Create a HOLD file in the Preprocessing Other component.
2. Create a new Join component with two joins.
3. Use the Report component to create a new report in WebFOCUS InfoAssist.
4. Clear the JOIN command and delete the HOLD file in the Postprocessing Other component.
5. Run the Reporting Object, and then view the object source to verify that the output is correct.
6. Verify that the HOLD file does not exist in the location in which it was created.

Creating a HOLD File With the Preprocessing Other Component

1. Create a Reporting Object with the baseapp and ibisamp selected as the application paths and employee as the Master File.

For more information on creating a Reporting Object, see Properties of a Reporting Object.

2. Select the Preprocessing Other component and click **Edit**.
3. Type the following code:

```
APP HOLD IBISAMP

TABLE FILE EMPLOYEE

PRINT EMPLOYEE.EMPINFO.DEPARTMENT AS 'NEWDEP'

EMPLOYEE.EMPINFO.CURR_SAL AS 'NEWCURR_SAL'

BY EMPLOYEE.EMPINFO.EMP_ID AS 'EMP_ID'

BY EMPLOYEE.EMPINFO.HIRE_DATE AS 'NEWHIRE_DATE'

ON TABLE HOLD AS WINFILE FORMAT FOCUS INDEX EMP_ID

END
```

4. Click **Save**, and then close the text editor.
5. To verify that the component works properly, select the Preprocessing Other component and click **Run**.

   The following output is produced:

```
0 NUMBER OF RECORDS IN TABLE= 12 LINES= 12
```

Creating a New Join Component With Two Joins

1. Select the **Join** component and click **New**.

   The Join component is prefilled with the data from the employee Master File.
2. Click **Add New**, select the winfile Master File, and click **OK**.
3. Click the **Add New** button, select the jobfile Master File, and click **OK**.
4. Click **OK** to close the Join tool, saving your changes.

5. Click **View Code** in the Reporting Object Quick Launch toolbar to review the code.

   The following code for the Join component displays:

```
-*COMPONENT=Join_J001

JOIN EMPLOYEE.EMPINFO.EMP_ID IN IBISAMP/EMPLOYEE

TO UNIQUE WINFILE.SEG01.EMP_ID IN IBISAMP/WINFILE TAG J001 AS J001

END

-*COMPONENT=Join_J002

JOIN EMPLOYEE.PAYINFO.JOBCODE IN IBISAMP/EMPLOYEE

TO UNIQUE JOBFILE.JOBSEG.JOBCODE IN IBISAMP/JOBFILE TAG J002 AS
J002

END
```

Creating a Report With the Report Component

1. Double-click the **Report** component.

   is launched.

2. Drag the NEWCURR_SAL measure from the Data pane to the canvas.
3. Drag the EMP_ID dimension to the left of the NEWCURR_SAL column in the canvas, and select **Drop as sort**.
4. Drag the NEWHIRE_DATE dimension to the left of the NEWCURR_SAL column in the canvas, and select **Drop as sort**.
5. Drag the NEWDEP dimension to the left of the NEWCURR_SAL column in the canvas, and select **Drop as sort**.

   The report is displayed as a table with four columns, sorted by EMP_ID.

6. Save the report and exit WebFOCUS InfoAssist.
7. To verify that the component works properly, click **Run** on the Quick Launch toolbar.

   The report that you created in is displayed in the browser.

Deleting the Join in the Postprocessing Other Component

1. Select the **Postprocessing Other** component and click **Edit**.
2. Type the following:

```
JOIN CLEAR *

? JOIN
```

3. Click **Save**, and then click **Exit**.
4. To verify that the Reporting Object works properly, click **Run** on the Quick Launch toolbar.

   The report that you created in is displayed in the browser.
5. Right-click the report webpage and select **View source**.

> **Note:** Depending on your browser, information may display differently.

6. Scroll to the bottom of the source window.

   The following comment is displayed:

```
<!--

0 NUMBER OF RECORDS IN TABLE= 12 LINES= 12

0 NUMBER OF RECORDS IN TABLE= 12 LINES= 12

0 HOLDING HTML FILE ON PC DISK ...

JOINS CURRENTLY ACTIVE

HOST                          CROSSREFERENCE

FIELD        FILE      TAG     FIELD     FILE      TAG AS ALL WH

-----        ----      ---     -----     ----      --- -- --- --
```

```
EMPLOYEE.EM&gt;EMPLOYEE        WINFILE.SEG&gt; WINFILE J0 J0 Y N

EMPLOYEE.PA&gt;EMPLOYEE        JOBFILE.JOB&gt; JOBFILE J1 J1 Y N

0 NO JOINS CURRENTLY IN EFFECT

-->
```

Joins

A join is a temporary connection between two or more data sources that share at least one common field. After you join two data sources, each time that WebFOCUS retrieves a record from the first data source (the host file), it also retrieves the matching records from the second data source (the target file).

For more information on joining data sources, see the *ibi™ WebFOCUS® InfoAssist User's Manual*.

Note:

- When you join two FOCUS data sources, the target file field must be indexed or the join must be a WHERE-based join. If you attempt to link to a non-indexed target file, the Reporting Object tool offers you the opportunity to create a WHERE-based join. For more information on creating WHERE-based joins, see *Join Group* in the *ibi™ WebFOCUS® InfoAssist User's Manual*.
- Since every procedure creates a new session on the WebFOCUS Reporting Server when it is run, the duration of your connection is always limited to a single procedure. Therefore, any join issued at the beginning of a procedure is in effect only for those report requests that are called in the same procedure.

Create a Join

Procedure

1. Right-click the **Joins** component and select **New**, or select the **Join** component and click **New** on the ribbon.

   The Join tool opens, displaying the data source associated with the Reporting Object.

2. Create a join using the Join tool.

   For more information on using the Join tool, see *Join Group* in the *ibi™ WebFOCUS® InfoAssist User's Manual*.

3. When you are finished, click **OK** to return to the Reporting Object tool.

Delete a Join

To delete a join, right-click the join and select **Delete**, or select the join and click **Delete** on the Quick Launch toolbar.

Rename a Join

Procedure

1. In the Join tool, select a join by clicking its connector line, and then click **Edit** on the Join toolbar.

   The Edit Join dialog opens.

2. Type a new description in the Description box and click **OK** to return to the Join tool.

   The new description appears under the Join component in the Reporting Object tool. The internal name used for the join remains the same name assigned to the join when you created it.

View or Edit Join Syntax in a Text Editor

Procedure

1. Select the join and click **Edit** on the ribbon, or right-click the join and select **Edit**.

The join code is displayed in a text editor.

2. Make the desired changes and click **Save** to return to the Reporting Object tool. To exit without making any changes, click **Close**.

Virtual Fields (DEFINE Statements)

A virtual field is a field whose value is not stored in the data source but can be calculated from the data that is there. A virtual field takes up no storage space. It is created only when a user accesses the Reporting Object that includes the virtual field.

You use the Define tool to create a virtual field. Using this tool, you specify the virtual field name and format, and the expression that defines the field. An expression enables you to combine fields, constants, predefined functions, and operators into an operation that produces a single value. When you define a virtual field, you must specify a field format type, length, and appropriate display options.

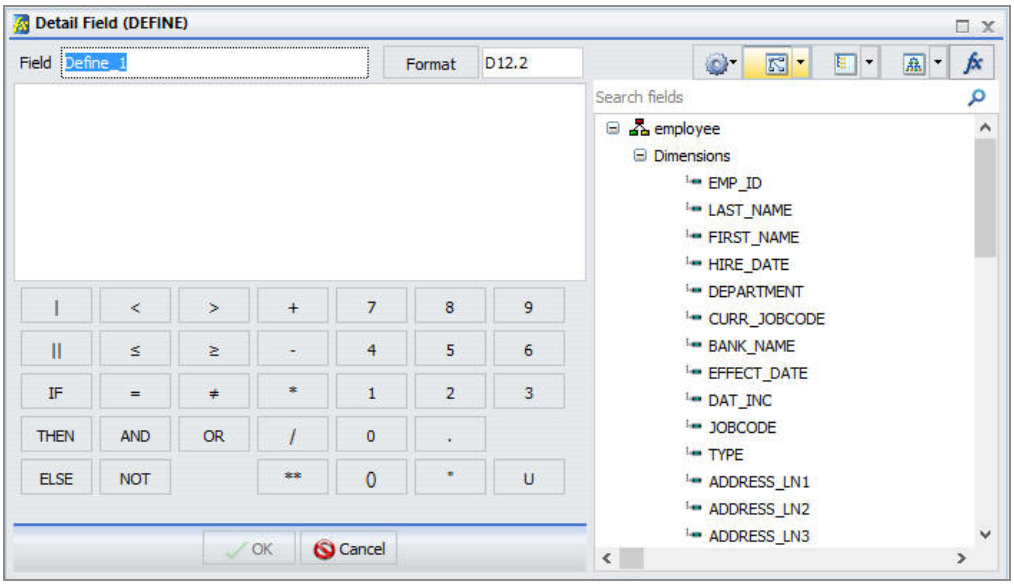
For more information about defining fields, see *Data Tab* in the *ibi™ WebFOCUS® InfoAssist User's guide*.

Create a Virtual Field

Procedure

1. Right-click the **Defines** component and select **New**, or select the **Define** component and click **New** on the ribbon.

   The Define tool dialog opens, as shown in the following image.



2. Create a virtual field using the Define tool.

   For more information about the Define tool, see *Data Tab* in the *ibi™ WebFOCUS® InfoAssist User's Manual*.

3. Click **OK** to save the virtual field and return to the Reporting Object tool.

   The virtual field now appears in the field list when a user accesses this Reporting Object.

Result

Note:

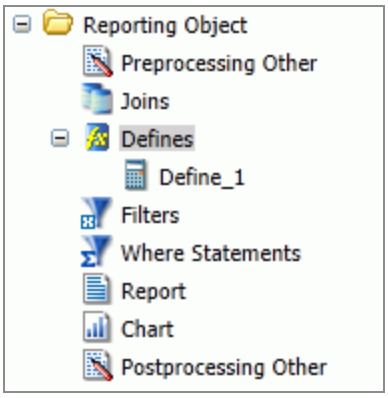
- The field list shown in the Define tool is not updated to display new virtual fields until you exit from the Define tool and reopen it. If you are creating a virtual field (DEFINE statement) that uses a previously created virtual field in the expression, you must save the first virtual field before creating the second one.

  To save the first virtual field, exit from the Define tool by clicking **OK**. Reopen the Define tool to create the second field. Alternatively, you can type the name of the first virtual field in the expression instead of selecting it from the field list. In this case, you do not need to exit and reopen the Define tool.

- Since every procedure creates a new session on the WebFOCUS Reporting Server when it is run, the duration of your connection is always limited to a single procedure. Therefore, any DEFINE statements issued at the beginning of a procedure are in effect only for those report requests that are called in the same procedure.

Edit a Virtual Field

Existing virtual fields appear under the Defines node, as shown in the following image.



Procedure

1. Right-click the virtual field that you want to edit and select **Open**, or select the virtual

field and click **Open** on the ribbon.

The Define tool dialog opens, displaying the selected field.

2. Make changes to the field name, expression, or format, and click **OK** to return to the Reporting Object tool.

View or Edit a Virtual Field in the Text Editor

Procedure

1. Right-click the virtual field that you want to view or edit as text and select **Edit**, or select the virtual field and click **Edit** on the ribbon.

   The Text Editor opens, displaying the selected field.

2. Make changes to the field name, expression, or format, and click **OK** to return to the Reporting Object tool.

Delete a Virtual Field

Procedure

1. Right-click the virtual field that you want to delete and select **Delete**, or select the virtual field and click **Delete** on the ribbon.
2. To delete all virtual fields at once, right-click the **Defines** component and select **Delete All**, or select the component and click **Delete All** on the ribbon.

Filters

Filters enable users to quickly select predefined criteria that limit the data included in a report or chart. Filters are selection criteria (WHERE statements) that you create for users, who then select the filters needed to limit the data in a report or chart without having to create their own selection criteria.

In order to create a filter, you must create the filter group and define the filters that make up the group.

Note: The Undo and Redo functions are not available for the Filter component until you have created at least one filter.

For more information about filters, see the *Using Filters to Customize the Display of Data* topic in the *ibi™ WebFOCUS® InfoAssist User's Manual*.

Create a Filter Group

Procedure

1. Right-click the **Filters** component and select **New**, or select the **Filter** component and click **New** on the ribbon.

   The Reporting Object Filter Group dialog opens.

2. In the Filter Group Name field, type a descriptive name for the filter group folder.

   Make the filter group name as explicit as possible, because users depend on this name to select the correct filter to apply to their reports.

3. Click **OK**.

   You are returned to the Reporting Object tool. The filter group folder appears below the Filter component node.

Define a Filter

Procedure

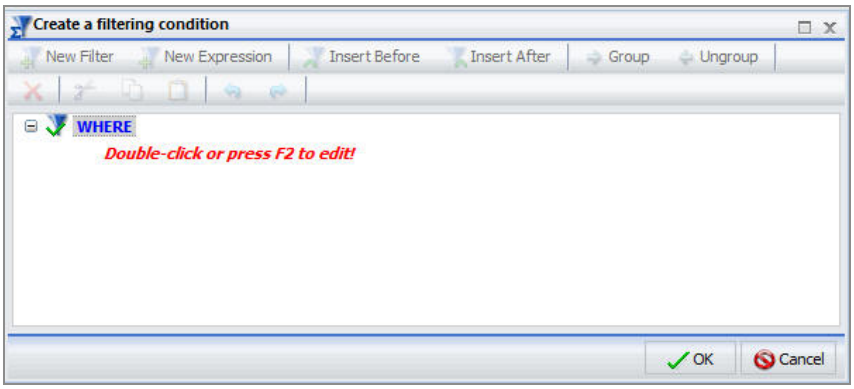
1. Right-click the Filter group to which you would like to add a filter and select **New**, or select the Filter group folder and click **New** on the Quick Launch toolbar.

   The Reporting Object Filter dialog opens.

2. In the Filter Name field, type a descriptive name for the filter and click **Add New** if you plan to create multiple filters, or click **OK** if you plan to create only one filter.

   Make the filter names as explicit as possible, because users depend on these names to select the correct filter to apply to their reports.

The Advanced Filter dialog opens, as shown in the following image.



3. Use the Advanced Filter dialog to create the filter.

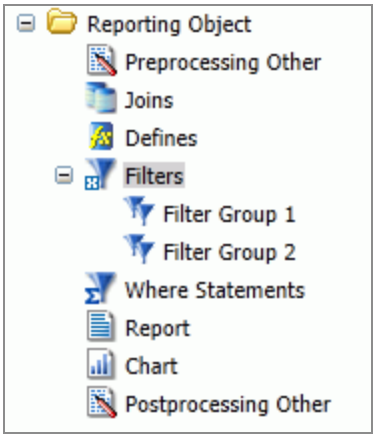
   For more information about defining filters, see *Data Tab* in the *ibi™ WebFOCUS® InfoAssist User's Manual*.

4. When you have created the filter, click **OK**.

   If you clicked **Add new** in step 2, the New Filter dialog opens. If you clicked **OK** in step 2, you are returned to the Reporting Object tool.

Edit a Filter

Existing filters appear under the Filter group beneath the Filters node, as shown in the following image.



Procedure

1. Right-click the filter that you want to edit and select **Open**, or select the filter and click **Open** on the ribbon.

   The Advanced Filter dialog opens, displaying the selected filter.

2. Make your changes and click **OK** to return to the Reporting Object tool.

Rename a Filter or Filter Group

Procedure

1. Right-click the filter or filter group that you want to rename and select **Properties**, or select the filter or filter group and click **Properties** on the ribbon.
2. Type the new filter or filter group name in place of the current one and click **OK**.

Delete a Filter or a Filter Group

Procedure

1. Right-click the filter or filter group that you want to delete and select **Delete**, or select the filter or filter group and click **Delete** on the ribbon.
2. To delete all filters at once, right-click the **Filter** component and select **Delete All**, or select the component and click **Delete All** on the ribbon.

View or Edit a Filter in the Text Editor

Procedure

1. Right-click the filter that you want to view or edit as text and select **Edit**, or select the filter and click **Edit** on the ribbon.

   The text editor opens, displaying the selected filter.

2. Make your changes and click **OK** to return to the Reporting Object tool.

Filter Considerations With Amper Auto Prompting

When Amper Auto prompting is used (**Prompt for Parameters** is selected in the Reporting Object properties), there are scenarios in which users are prompted to provide amper variable values in selection criteria (WHERE statements) in the Reporting Object that the user did not save with the report. This is due to the internal processing of reports created from Reporting Objects. You can avoid this issue by using the Filter component to predefine selection criteria for users to include in reports. Only the filter or filters that users select for inclusion in their reports are evaluated by the WebFOCUS Amper Auto prompting facility.

Selection Criteria (WHERE Statements)

WHERE statements or selection criteria, restrict the data retrieved to only those records that meet the conditions that you specify. Filters are selection criteria that run when the user selects the filter in WebFOCUS. Other selection criteria run when the user opens the Reporting Object, preventing data values that do not meet the criteria from being available to the user.

For more information on WHERE statements, see *Field Tab* in the *ibi™ WebFOCUS® InfoAssist User's Manual*.

Create Selection Criteria

Procedure

1. Right-click the **Where Statements** component and select **New**, or select the component and click **New** on the ribbon.

   The New Filter dialog opens.

2. Double-click the red text or press F12 to edit the WHERE statement.

   For more information on creating selection criteria, see the *Using Filters to Customize the Display of Data* topic in the *ibi™ WebFOCUS® InfoAssist User's Manual*.

3. When you have created the selection criterion, click **OK** to return to the Reporting Object tool.

Report Component

The Report component creates a report template and saves it in a Reporting Object. Authorized users can use the report template to create a report that suits their needs and then save the new report.

To create a report template, double-click the **Report** component, or right-click the component and select **Open**. opens, allowing you to create a report template.

For more information on using WebFOCUS InfoAssist, see the *ibi™ WebFOCUS® InfoAssist User's Manual.*

Note:

- To open the report source code in the text editor instead of WebFOCUS InfoAssist, right-click the **Report** component and select **Edit**. Manual changes to the code may make the report incompatible with the WebFOCUS InfoAssist.
- Syntax and error checking are not performed on the commands that you type until the Reporting Object is run.
- If the Reporting Object contains both a report and a chart, the user is asked whether to run the object as a report or chart. The Reporting Object cannot be run simultaneously as both.
- When Amper Auto prompting is used (**Prompt for Parameters** is selected in the Reporting Objects properties), there are scenarios in which users are prompted to provide amper variable values in selection criteria (WHERE statements) in the Reporting Object that the user did not save with the report. This is due to the internal processing of reports created from Reporting Objects. You can avoid this issue by using the Filter component to predefine selection criteria for users to include in reports. Only the filter or filters that users select for inclusion in their reports are evaluated by the WebFOCUS Amper Auto prompting facility.

Chart Component

The Chart component works exactly like the Report component. The Chart component creates a chart template and saves it in a Reporting Object. Authorized users can use the chart template to create a chart that suits their needs and then save the new chart.

To create a chart template, double-click the **Chart** component, or right-click the component and select **Open**. opens, allowing you to create a chart template.

For more information on using WebFOCUS InfoAssist, see the *ibi™ WebFOCUS® InfoAssist User's Manual.*

Note:

- To open the chart source code in the text editor instead of WebFOCUS InfoAssist, right-click the **Chart** component and select **Edit**. Manual changes to the code may make the chart incompatible with WebFOCUS InfoAssist.
- Syntax and error checking are not performed on the commands that you type until the Reporting Object is run.
- If the Reporting Object contains both a report and a chart, the user is asked whether to run the object as a report or chart. The Reporting Object cannot be run simultaneously as both.
- When Amper Auto prompting is used (**Prompt for Parameters** is selected in the Reporting Object properties), there are scenarios in which users are prompted to provide amper variable values in selection criteria (WHERE statements) in the Reporting Object that the user did not save with the report. This is due to the internal processing of private reports created from Reporting Objects. You can avoid this issue by using the Filter component to predefine selection criteria for users to include in reports. Only the filter or filters that users select for inclusion in their reports are evaluated by the WebFOCUS Amper Auto prompting facility.

Postprocessing Other Component

The Postprocessing Other component contains custom code that must run after all other components. You can use the text editor in the component to create and edit code, or to paste the code that you have copied from another application.

To create or edit a Postprocessing Other component, double-click the component, or select the component and click **Edit** on the ribbon. Alternatively, right-click the component and select **Edit**. The Postprocessing Other dialog opens.

See *Creating Reports With ibi™ WebFOCUS® Language* for more information about using the WebFOCUS language to code procedures.

Note:

- Syntax and error checking are not performed on the commands that you type until the Reporting Object is run.
- Commands in the Postprocessing Other component should not return a displayable answer set.
- WebFOCUS InfoAssist previews in the Report component and the Chart component are disabled if the Postprocessing Other component contains the syntax:

  ```
  -OLAP ON
  ```

  To avoid this issue, enable OLAP through the Reporting Object properties instead of the Postprocessing Other component. For more information on the Reporting Object properties, see Properties of a Reporting Object.

  For information on Amper Auto Prompting, see Considerations for Amper Auto Prompting With the Preprocessing and Postprocessing Other Components.

Changing Metadata Classification Values When Uploading Data Files

When uploading a data file, you can view the recommended metadata classification values for each character-valued column. You can choose to keep the recommended values, or to change them.

Including classification values in your data improves the accuracy of mapping column tables correctly to each other. This is useful if you are integrating data from multiple sources, or if integrating data into a system with a predefined hierarchy.

Note: For more information, see the *ibi™ WebFOCUS® Installation and Configuration* guide for your platform.

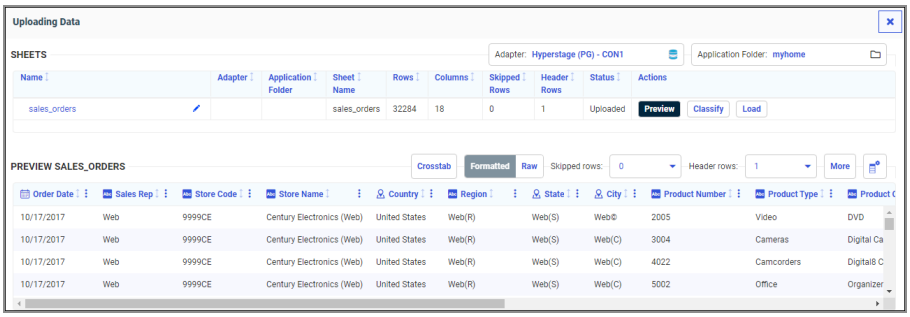
Change Metadata Classification Values When Uploading Data Files in Simple Mode

You can change the metadata classification values for your data during the upload process.

Procedure

1. Upload a desktop file using Get Data. For more information, see *Uploading Data Files*.

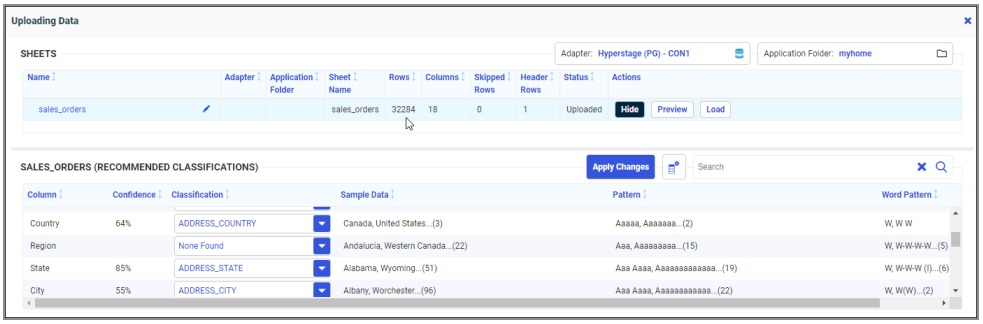
   The Uploading Data page opens, as shown in the following image.



   If the Metadata Classification feature has been installed, the Uploading Data page displays a Classify button .

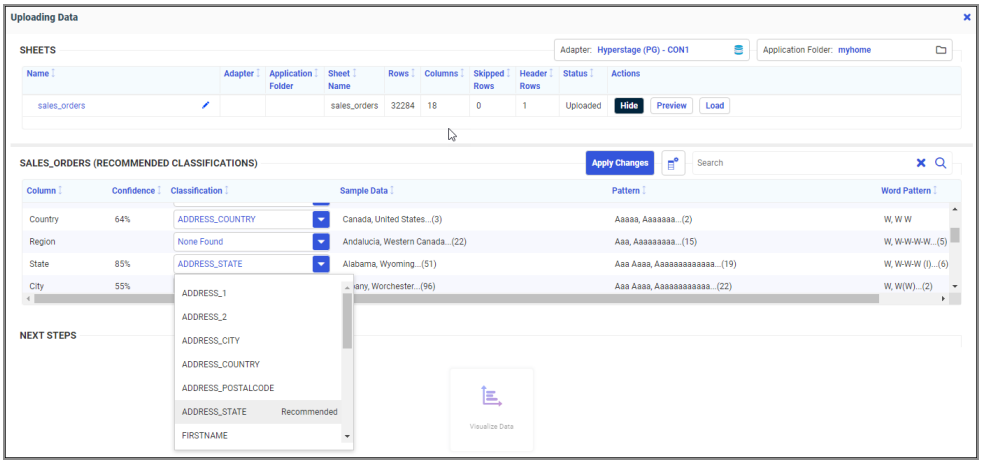
2. Click the **Classify** button.

   The Recommended Classifications page opens, as shown in the following image.



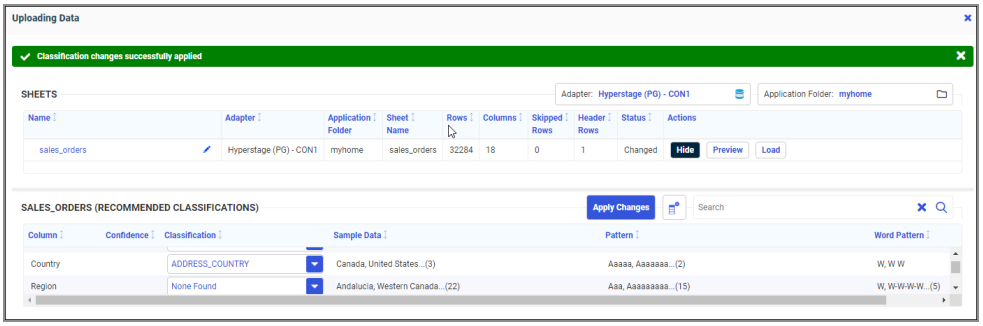
When a recommended classification can be made, the columns that were classified have a Confidence Level associated with them, which indicates the probability that the classification is correct.

You can select from a column list of classifications, or enter your own classification, by typing into the text box next to the column. Clicking a column dropdown arrow shows the list of classifications, and indicates which is recommended, as shown in the following image.



3. Click **Apply Changes**.

   Your changes are applied, as indicated by a green message bar at the top of the page, as shown in the following image.



4. Click the **Load** button to load your data.

   Once your data is loaded, with the proper permissions to edit synonyms, you can leverage further capabilities by accessing the WebFOCUS Reporting Server browser interface.

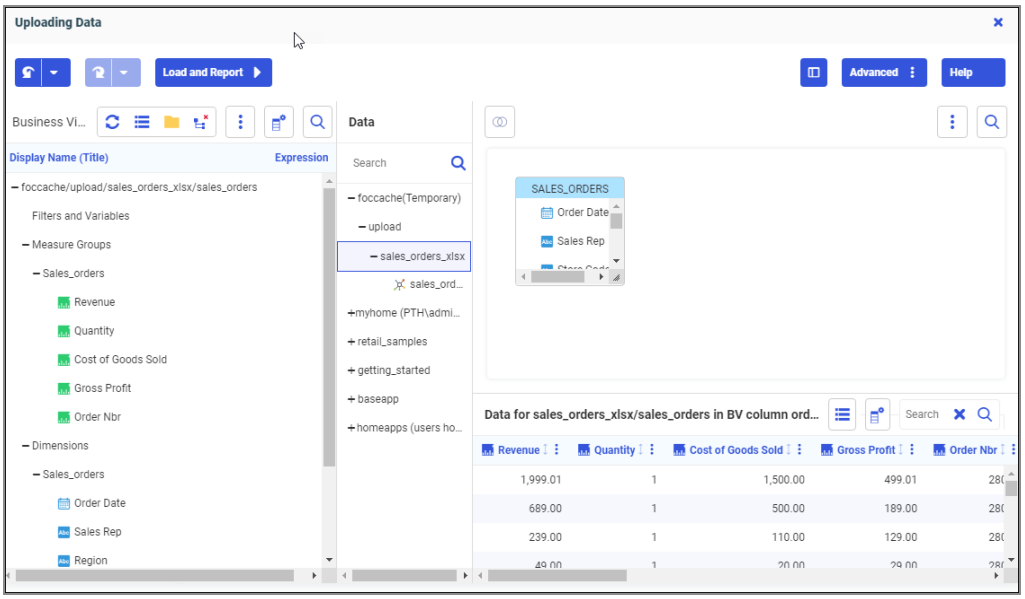
Change Metadata Classification Values When Uploading Data Files in Advanced Mode

You can change the metadata classification values for your data during the upload process in advanced mode.

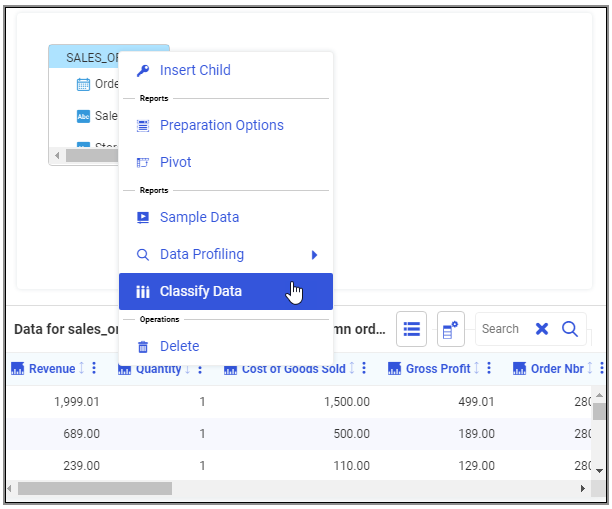
Procedure

1. On the WebFOCUS Hub, click the **plus** menu, select **Get Data (Advanced)**, click a desktop file type, and then select a file to upload, or, on the WebFOCUS Home Page, click the **plus** menu, click **Prepare and Manage Data**, click **Get Data**, click **Advanced Mode**, click a desktop file type, and then select a file to upload.

   Your data opens in the Uploading Data page, as shown in the following image.



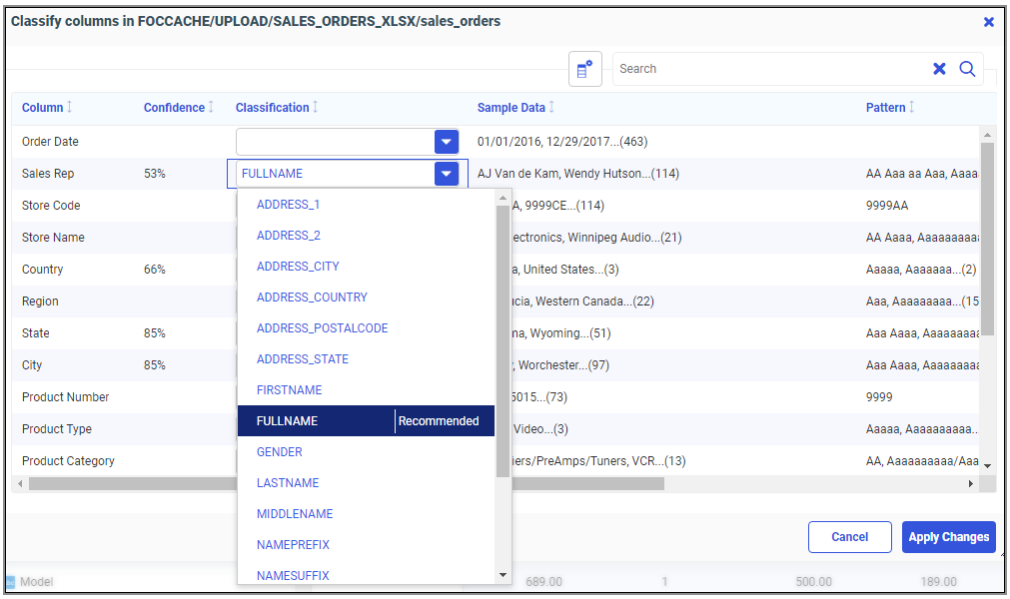
2. From the canvas, right-click the canvas data file and select **Classify Data** from the context menu, as shown in the following image.



The Classify dialog opens, as shown in the following image.

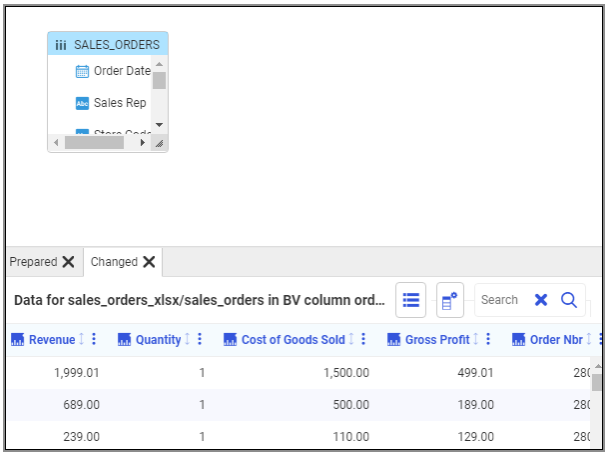
When a recommended classification can be made, the columns that were classified have a Confidence Level associated with them, which indicates the probability that the classification is correct.

You can select from a column list of classifications, or enter your own classification, by typing into the text box next to the column. Clicking a column dropdown arrow shows the list of classifications, and indicates which is recommended, as shown in the following image.



3. Click **Apply Changes**.

   You are returned to the Uploading Data page. Your changes are applied, as indicated by a classification icon next to the name of the canvas data file, as shown in the following image.



4. Click the **Load and Report** button to load your data.

   Once your data is loaded, with the proper permissions to edit synonyms, you can leverage further capabilities by accessing the WebFOCUS Reporting Server browser interface.

Running Predictive Analytics on Your Data

When creating a Data Flow, you can easily run predictive analytics on your data sets using Machine Learning functions, without prior knowledge of advanced statistics.

Train and run multiple iterations of predictive models in parallel, evaluate and compare models actively, and select which model you want to save. Then you can re-run your model against new data sets.

Note: For more information, see the *ibi™ WebFOCUS® Installation and Configuration* manual for your platform.

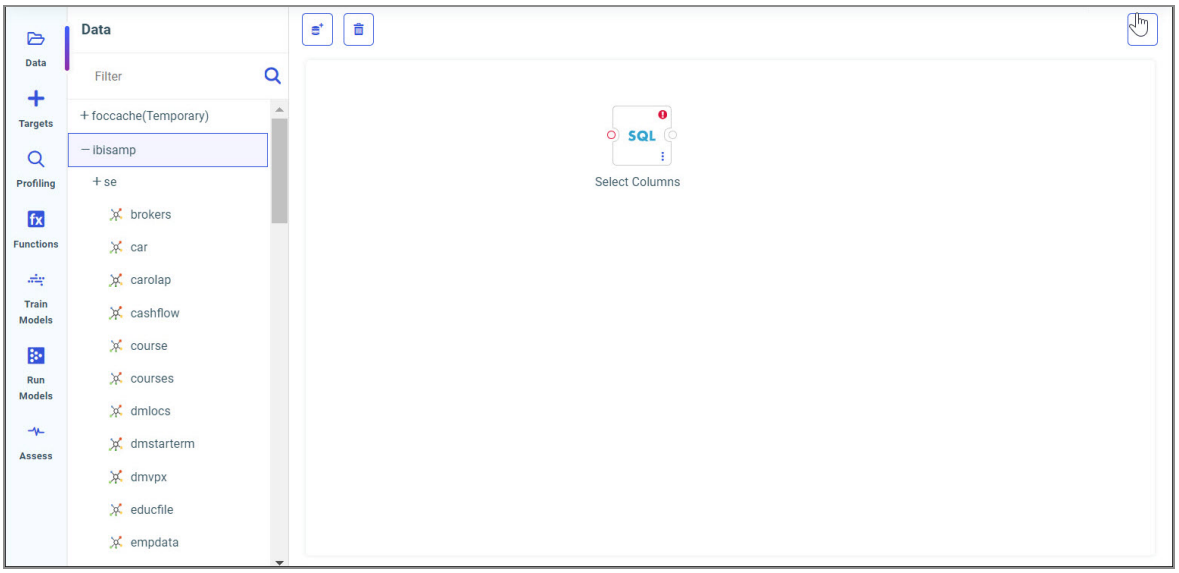
Access Predictive Models

After you create a Data Flow, you can select from different model algorithms to run against your data set.

Procedure

1. From the WebFOCUS Hub, click the plus menu, and then click **Create Data Flow**. Or, from the WebFOCUS Hub, click **Application Directories**, click an application, then right-click a data set, and select **Flow**. Or, from the WebFOCUS Reporting Server browser interface, click an application, then right-click a data set, and select **Flow**.

   The Data Flow page opens, as shown in the following image.

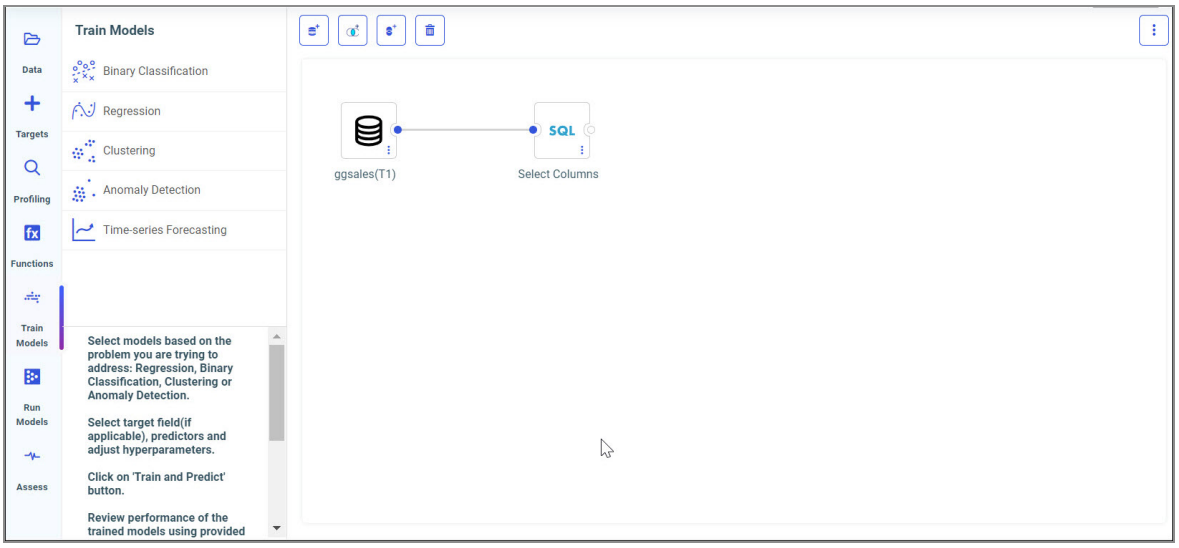


2. From the Data panel, drag a data source onto the canvas, as shown in the following image.

> **Note:** Double-click a data source to display sample data.

3. From the side panel, click **Train Models**.

   The Train Models panel opens, as shown in the following image.



The following models display within the Train Models panel:

- Binary Classification
- Multiclass Classification
- Regression
- Clustering
- Anomaly Detection
- Time-series Forecasting

Now you can select a model to train and run against your data.

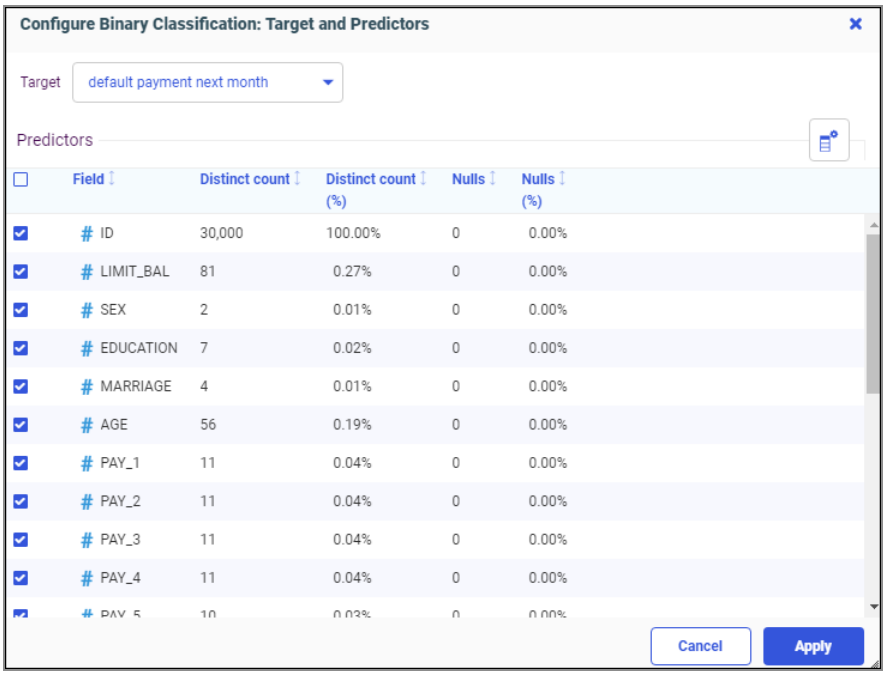
Train Binary Classification Models

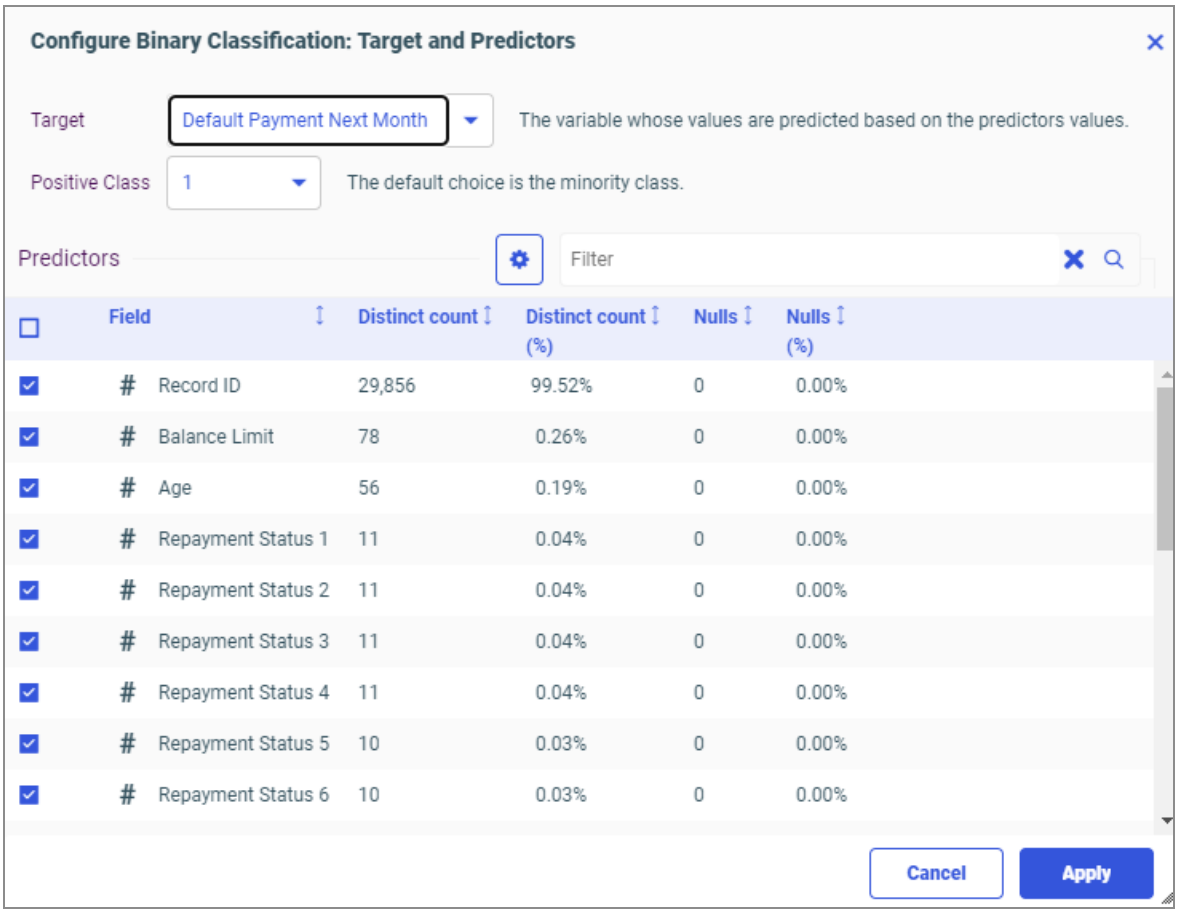
Binary Classification models predict binary values based on four different algorithms: Random Forest, K-Nearest-Neighbors, Logistic Regression, and Extreme Gradient Boosting.

Procedure

1. Double-click or drag the Binary Classification model to the canvas.

   The Configure dialog displays, as shown in the following image.


Configure Binary Classification: Target and Predictors
Target
default payment next month
Predictors
Field
Distinct count
Distinct count (%)
Nulls
Nulls (%)
ID 30,000 100.00% 0 0.00%
LIMIT_BAL 81 0.27% 0 0.00%
SEX 2 0.01% 0 0.00%
EDUCATION 7 0.02% 0 0.00%
MARRIAGE 4 0.01% 0 0.00%
AGE 56 0.19% 0 0.00%
PAY_1 11 0.04% 0 0.00%
PAY_2 11 0.04% 0 0.00%
PAY_3 11 0.04% 0 0.00%
PAY_4 11 0.04% 0 0.00%
Cancel
Apply



You can click the Target dropdown menu to select a different target. All numeric field measures are selected, by default, as Predictors. You can add or remove Predictors by selecting or clearing the checkboxes.

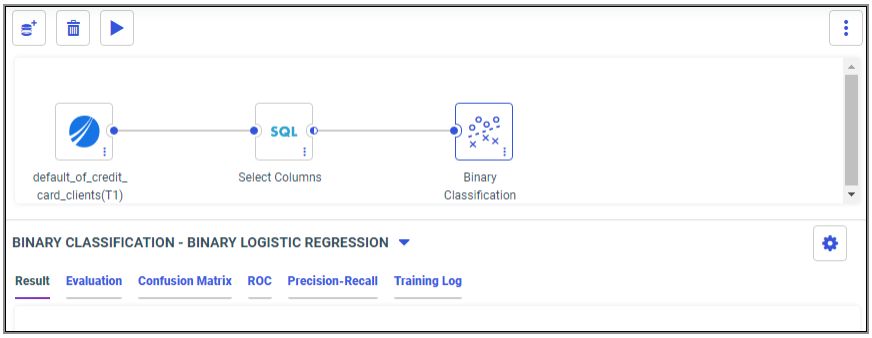
You can click the Positive Class dropdown menu to select the Positive Class. The minority class is selected, by default.

The Positive Class indicates the class that the classifier is trained to detect. Often it is an unwanted outcome, such as a loan defaulting or a customer churning. The classifier computes the probability of belonging to the Positive Class and generates a class assignment by applying the decision threshold to the probabilities. The selection of the Positive Class, and therefore implicitly the Negative Class, affects the counts of True Positives, True Negatives, False Positives, and False Negatives in the Confusion Matrix, and thus, most model performance metrics that are derived from it.

2. To save the configuration settings, click **Apply**.

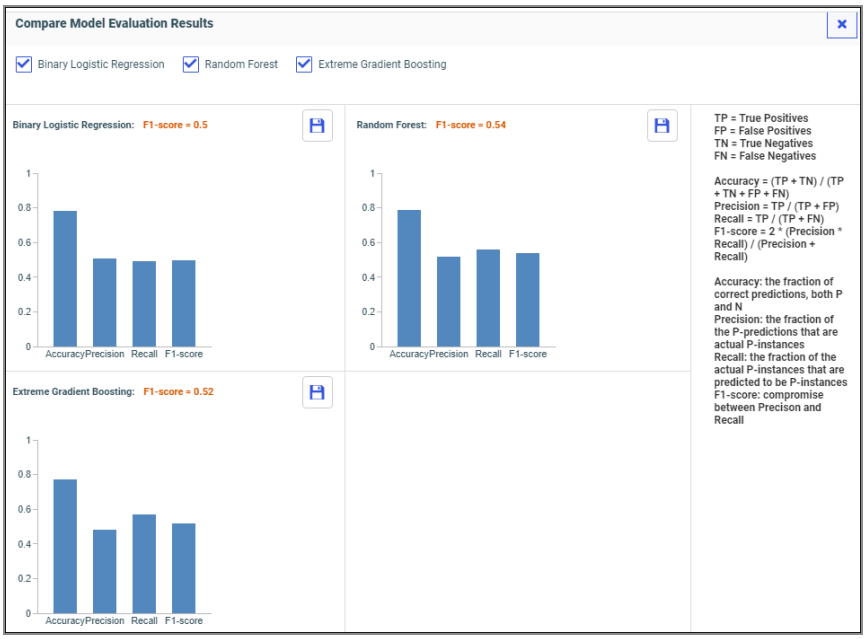
3. Click **Apply**.

   Your selected model type appears on the data flow canvas, as shown in the following image.



4. Click the **Train and Predict** icon to train your model.

   The Compare Model Evaluation Results dialog opens, as shown in the following image.



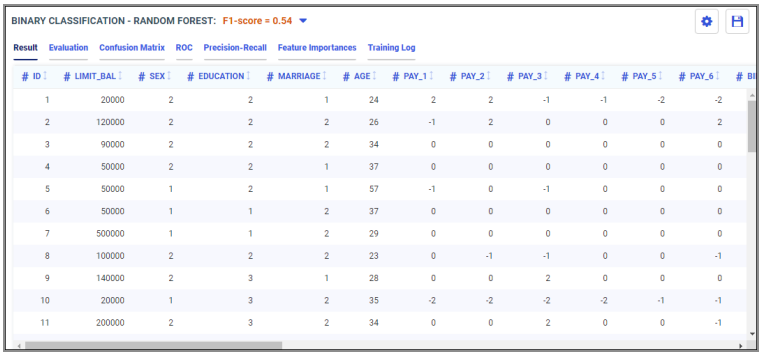
   The training of the various models is done in parallel, allowing you to easily compare results and determine which model is best. You can filter which model comparisons you want to see by selecting or clearing the model checkboxes.

5. Close the Compare Model Evaluation Results dialog to return to the canvas.

Note: To re-open the Compare Model Evaluation Results dialog, click the **Compare** icon on the canvas toolbar.

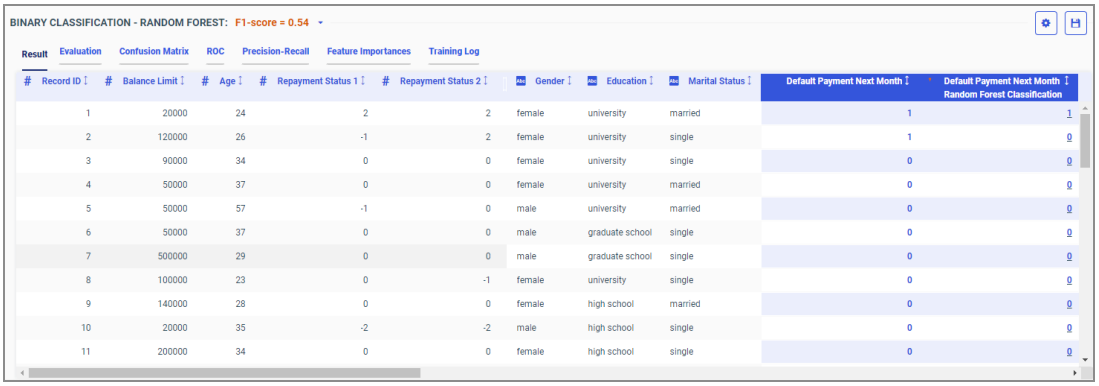
Your model data displays in the following tabs. You can select different model algorithm options from the model dropdown menu. The best model is selected by default.

- **Result.** A preview of the first 50 rows of your new data set. Target and predicted columns are highlighted in yellow.



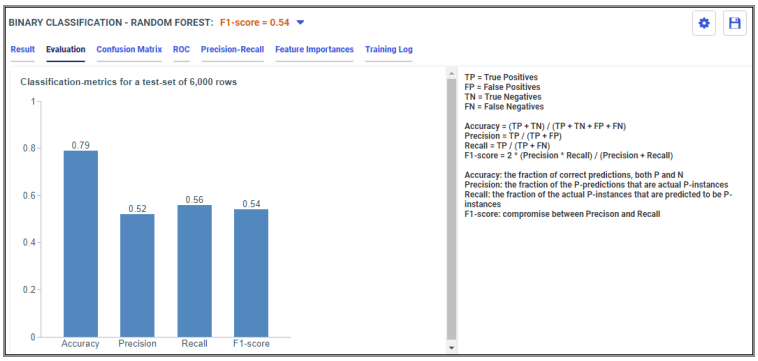
# ID	# LIMIT_BAL	# SEX	# EDUCATION	# MARRIAGE	# AGE	# PAY_1	# PAY_2	# PAY_3	# PAY_4	# PAY_5	# PAY_6
1	20000	2	2	1	24	2	2	-1	-1	-2	-2
2	120000	2	2	2	26	-1	2	0	0	0	2
3	90000	2	2	2	34	0	0	0	0	0	0
4	50000	2	2	1	37	0	0	0	0	0	0
5	50000	1	2	1	57	-1	0	-1	0	0	0
6	50000	1	1	2	37	0	0	0	0	0	0
7	500000	1	1	2	29	0	0	0	0	0	0
8	100000	2	2	2	23	0	-1	-1	0	0	-1
9	140000	2	3	1	28	0	0	2	0	0	0
10	20000	1	3	2	35	-2	-2	-2	-2	-1	-1
11	200000	2	3	2	34	0	0	2	0	0	-1

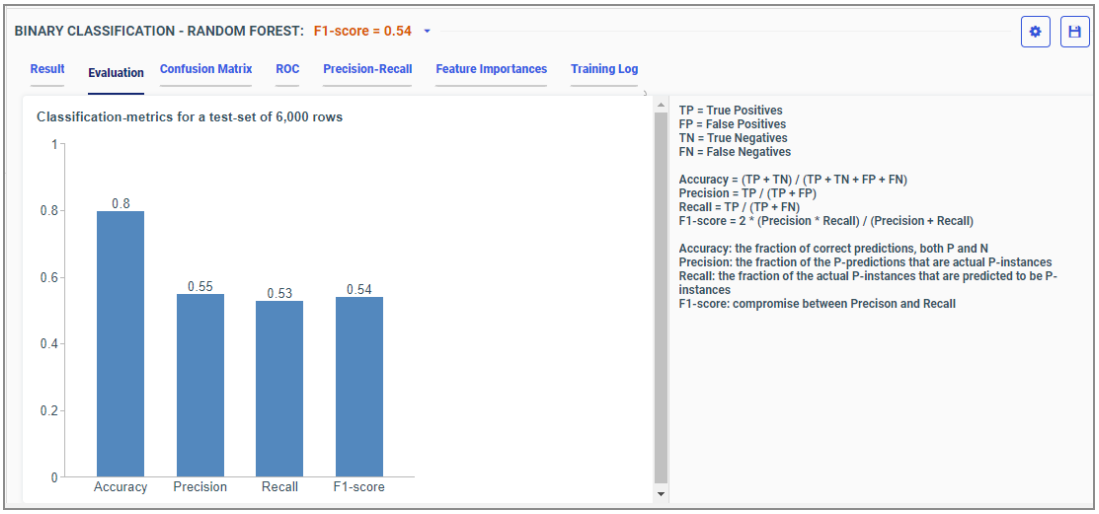
- **Result.** A preview of the first 50 rows of your new data set. Target and predicted columns are highlighted.



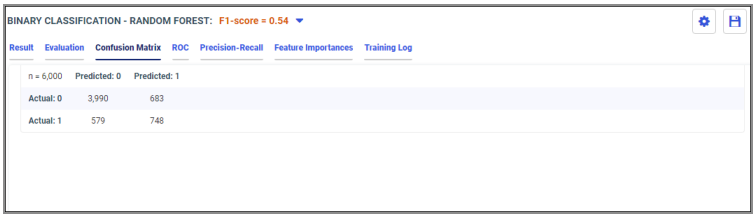
# Record ID	# Balance Limit	# Age	# Repayment Status 1	# Repayment Status 2	Gender	Education	Marital Status	Default Payment Next Month	Default Payment Next Month Random Forest Classification
1	20000	24	2	2	female	university	married	1	1
2	120000	26	-1	2	female	university	single	1	0
3	90000	34	0	0	female	university	single	0	0
4	50000	37	0	0	female	university	married	0	0
5	50000	57	-1	0	male	university	married	0	0
6	50000	37	0	0	male	graduate school	single	0	0
7	500000	29	0	0	male	graduate school	single	0	0
8	100000	23	0	-1	female	university	single	0	0
9	140000	28	0	0	female	high school	married	0	0
10	20000	35	-2	-2	male	high school	single	0	0
11	200000	34	0	0	female	high school	single	0	0

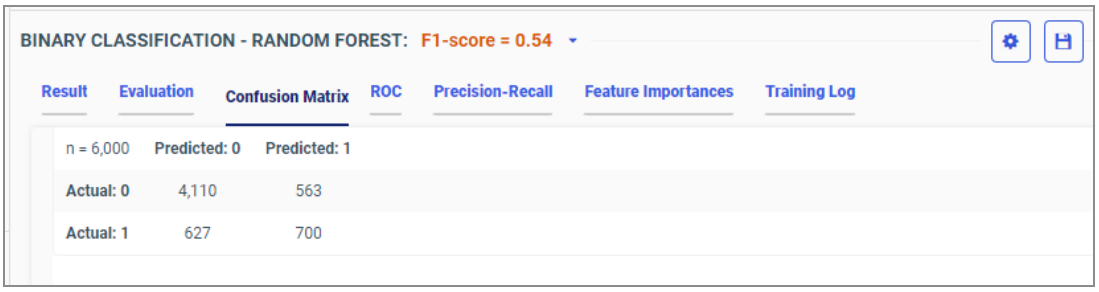
- **Evaluation.** Various model-performance metrics are displayed in graphs and tables.



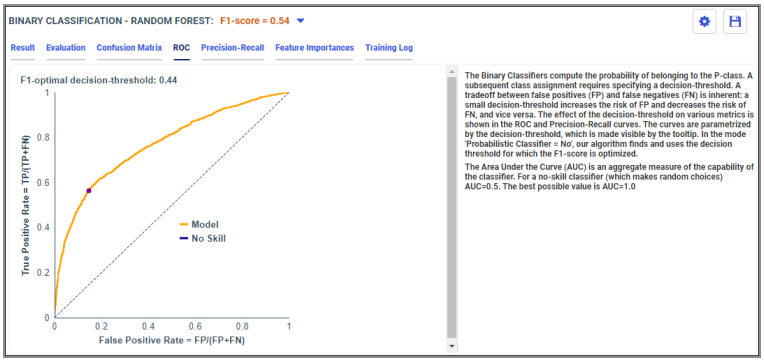


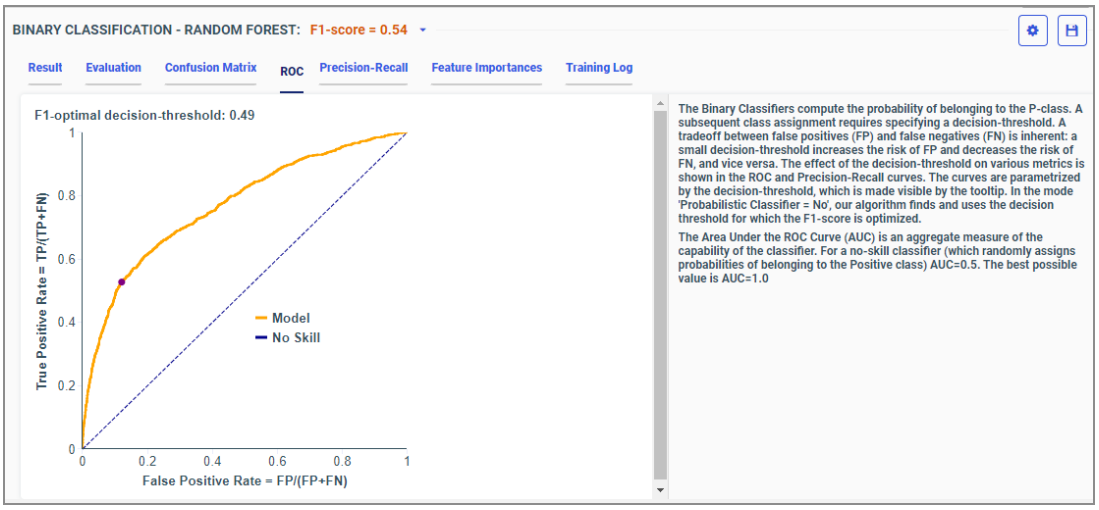
- **Confusion Matrix.** The confusion matrix shows the numbers of True Positive, True Negative, False Positive, and False Negative predictions made on a test data set.



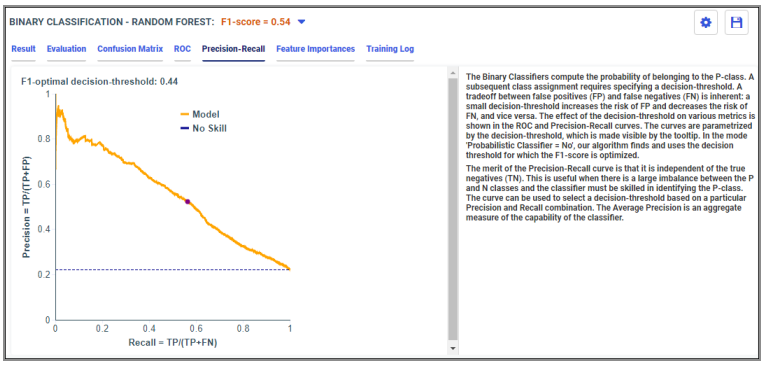


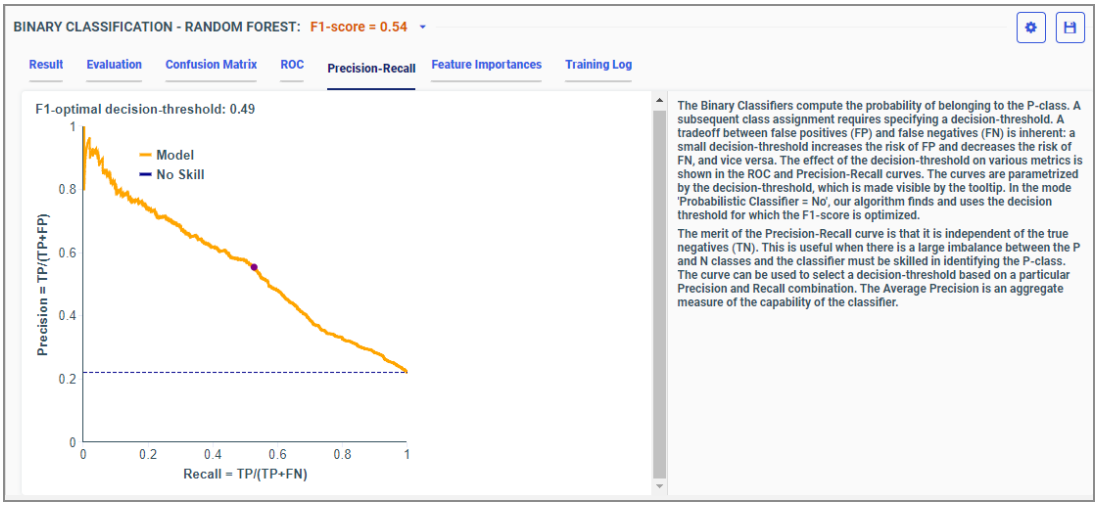
- **ROC.** The effect of the decision-threshold on various metrics is shown in the ROC curve.



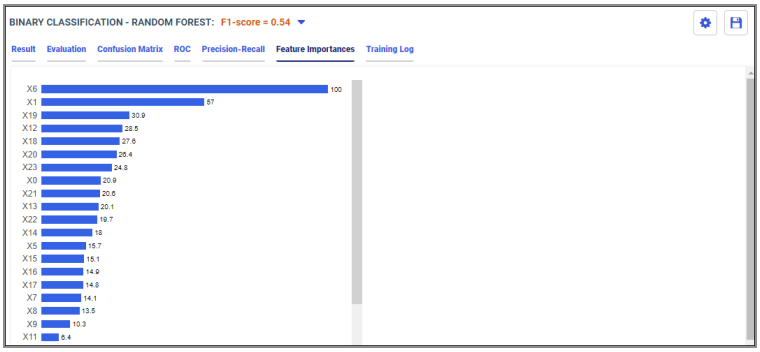


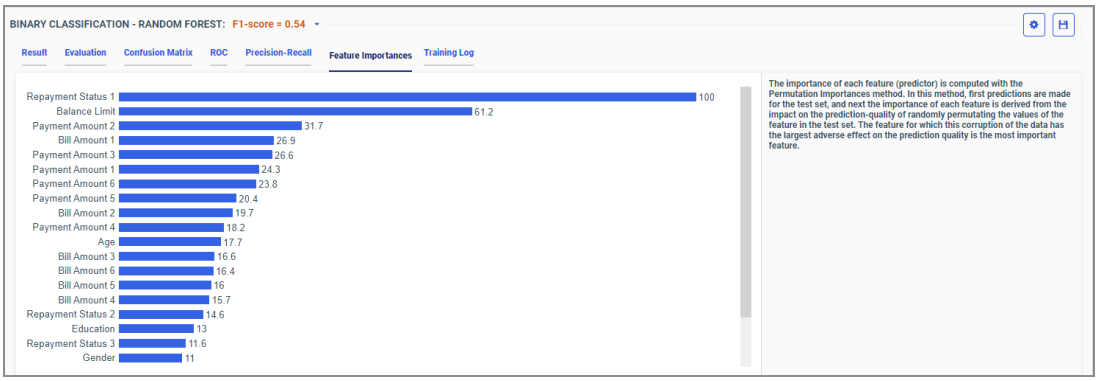
- **Precision-Recall.** The Precision-Recall curve is independent of the true negatives.



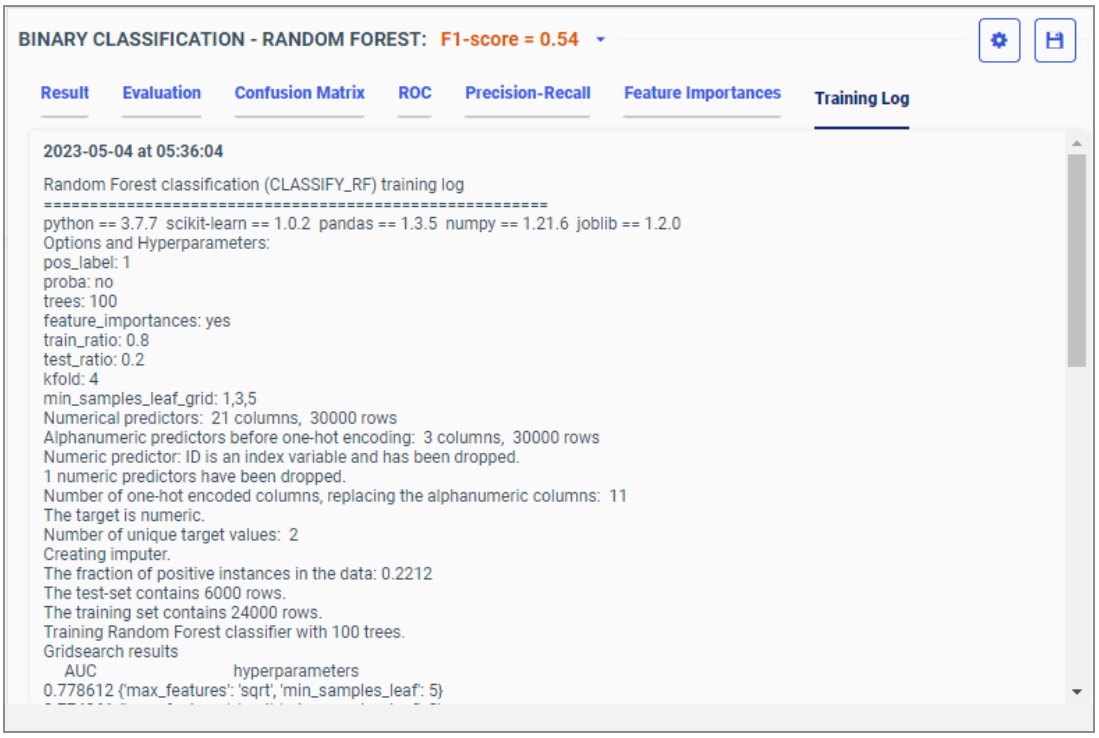


- **Feature Importances.** The Feature Importances shows predictors, also known as features, which are most influential in determining the model outcome.





- **Training Log.** The training log displays steps of the automated model training process, performance metrics, and hyperparameter values.



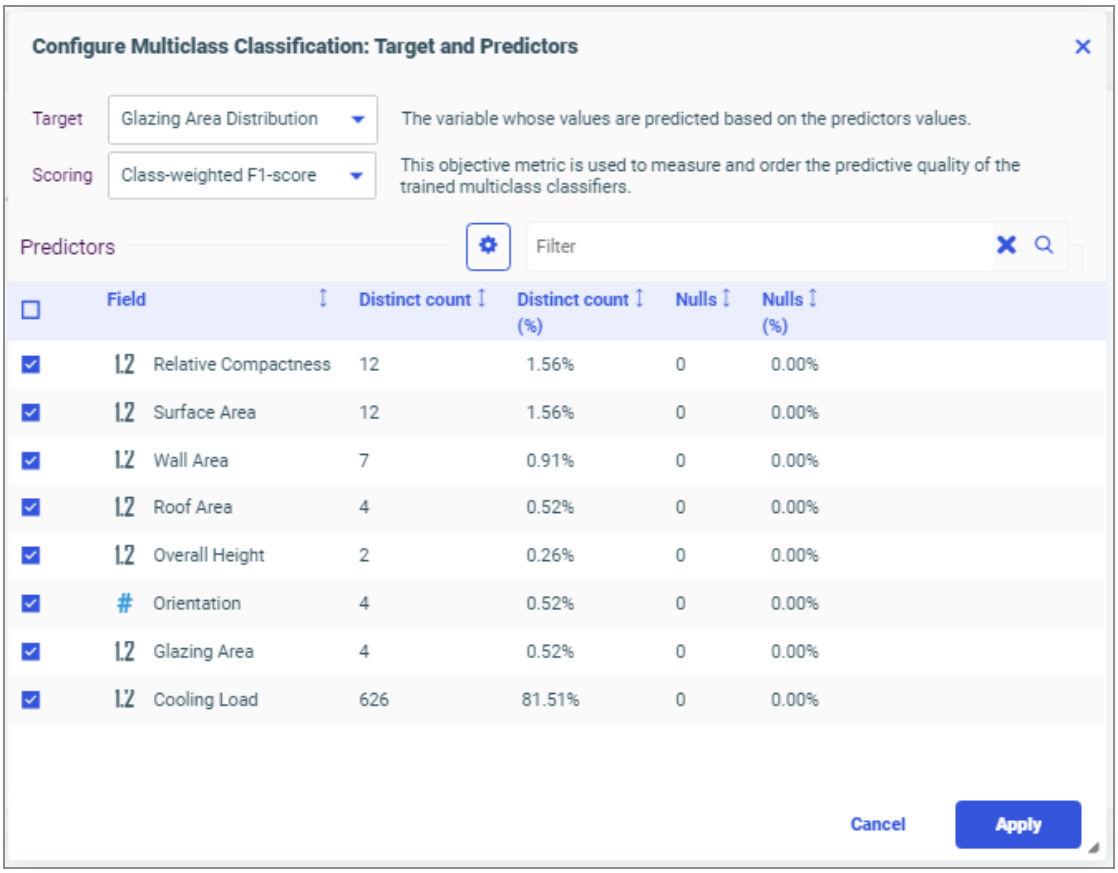
Train Multiclass Classification

Multiclass classification is a type of machine learning problem where the goal is to classify instances into one of three or more classes. Multiclass Classification predict values based on four different algorithms: Random Forest, Neural Network, XGBoost, Support Vendor Machine.

Procedure

1. Double-click or drag the MultiClass Classification model to the canvas.

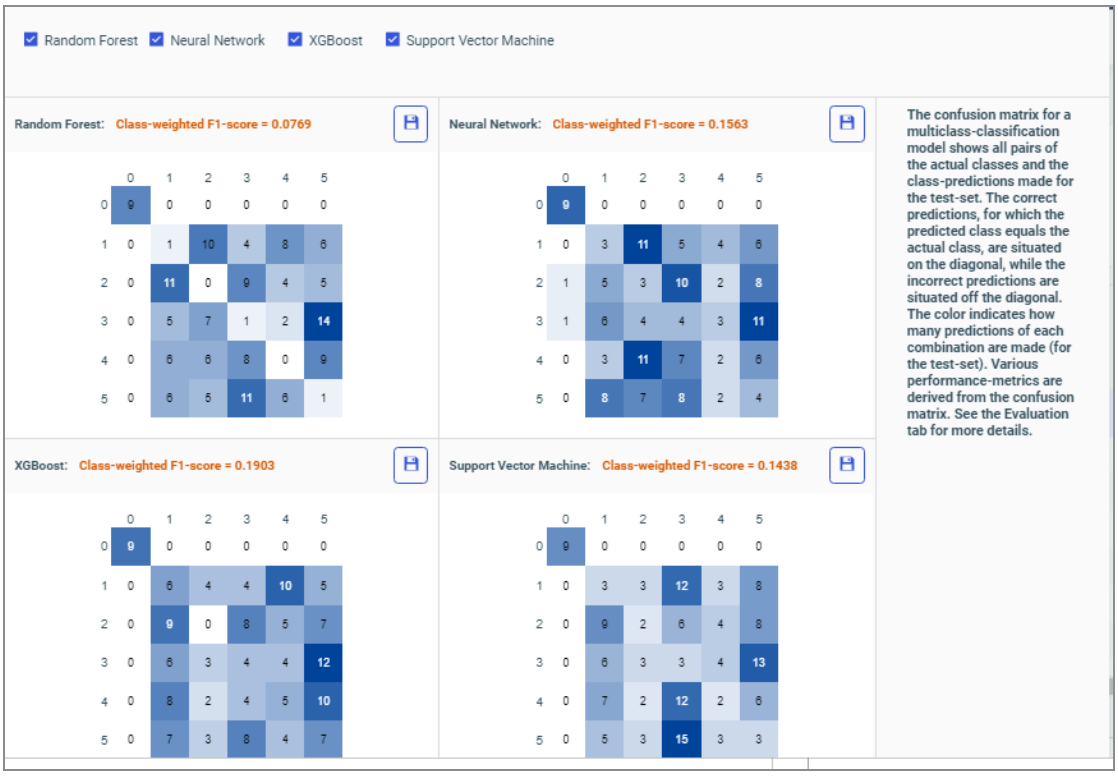
   The Configure dialog displays, as shown in the following image.



You can click the Target dropdown menu to select a different target. All numeric field measures are selected, by default, as Predictors. You can add or remove Predictors by selecting or clearing the checkboxes.

2. To save the configuration settings, click **Apply**.
3. Click the **Train and Predict** icon to train your model.

   The training of the various models is done in parallel, allowing you to easily compare results and determine which model is best. You can filter which model comparisons you want to see by selecting or clearing the model checkboxes.



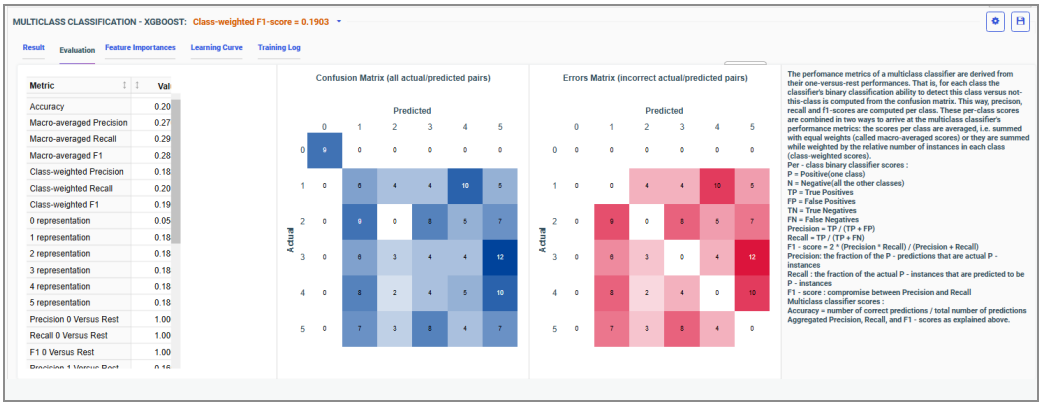
4. Close the Compare Model Evaluation Results dialog to return to the canvas.

> **Note:** To re-open the Compare Model Evaluation Results dialog, click the **Compare** icon on the canvas toolbar.

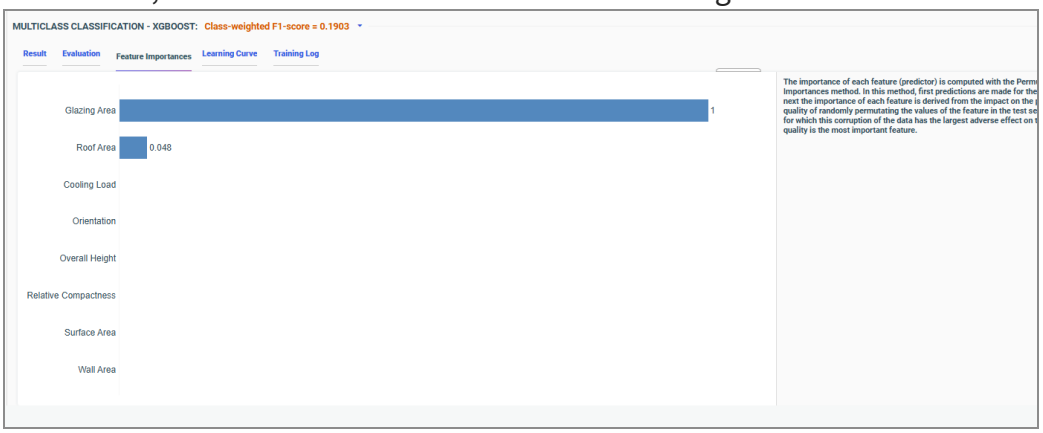
Your model data displays in the following tabs. You can select different model algorithm options from the model dropdown menu. The best model is selected by default.

- **Result.** A preview of the first 50 rows of your new data set. Target and predicted columns are highlighted.

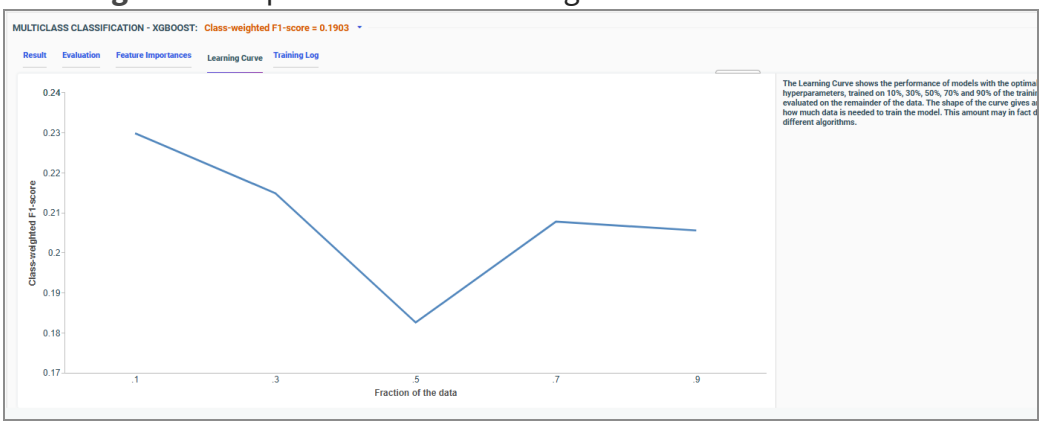
- **Evaluation.** Various model-performance metrics are displayed in graphs and tables.



- **Feature Importances.** The Feature Importances shows predictors, also known as features, which are most influential in determining the model outcome.



- **Learning Curve.** A preview of the learning curve of the model.



- **Training Log.** The training log displays steps of the automated model training

process, performance metrics, and hyperparameter values.

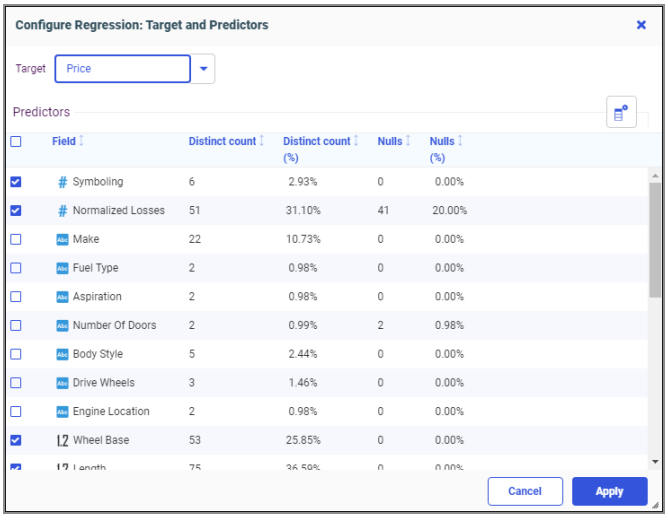
Train Regression Models

These models predict numeric values based on four different regression algorithms: Random Forest, K-Nearest-Neighbors, Polynomial Regression, Extreme Gradient Boosting and Neural Network.

Procedure

1. Double-click or drag the Regression model to the canvas.

   The Configure dialog displays, as shown in the following image.



   You can click the Target dropdown menu to select a different target. All numeric field

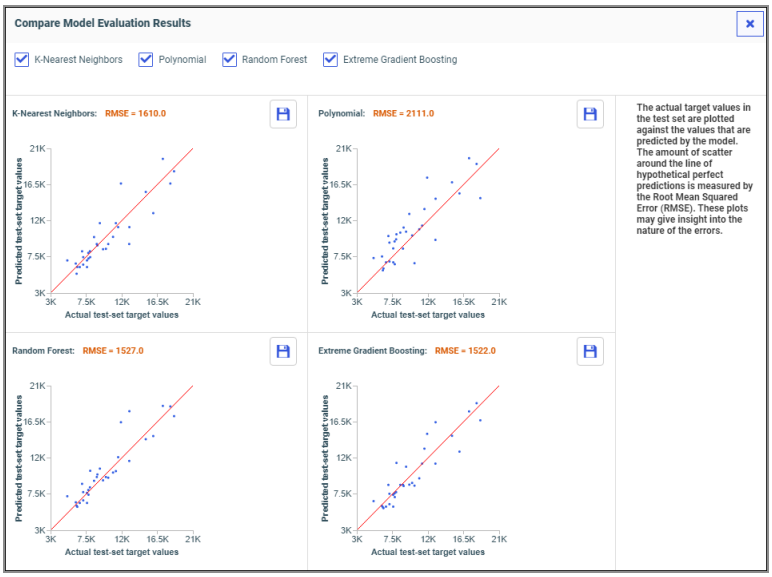
measures are selected, by default, as Predictors. You can add or remove Predictors by selecting or clearing the checkboxes.

2. Click **Apply**.

   Your selected model type appears on the dataflow canvas, as shown in the following image.

3. Click the **Train and Predict** icon to train your model.

   The Compare Model Evaluation Results dialog opens, as shown in the following image.



The model algorithms run in parallel, allowing you to easily compare results and determine which model is best. The best model has the lowest Root Mean Square Error value, and a scatter plot with dots closest to the red line. You can filter which model comparisons you want to see by selecting or deselecting the model

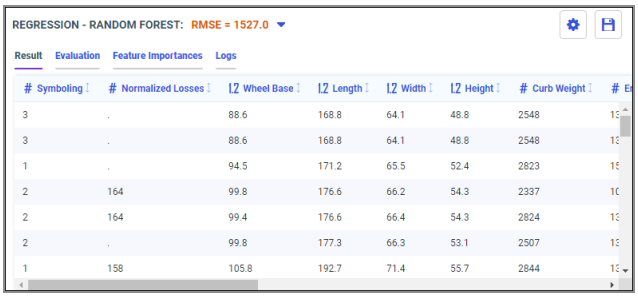
checkboxes.

4. Close the Compare Model Evaluation Results dialog to return to the canvas.

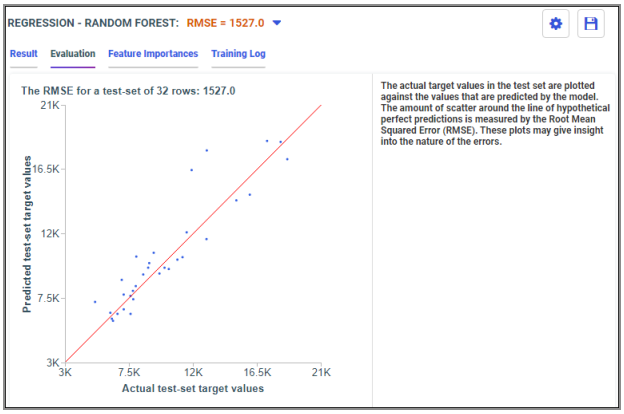
> **Note:** To re-open the Compare Model Evaluation Results dialog, click the **Compare** icon on the canvas toolbar.

Your model data displays in the following tabs. You can select different model algorithm options from the model dropdown menu. The best model is selected, by default.

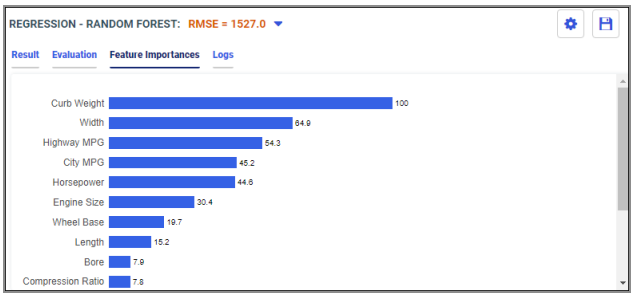
- **Result.** A preview of the first 50 rows of your new data set. Target and predicted columns are highlighted in yellow.



- **Evaluation.** A chart that demonstrates the accuracy of the selected model.



- **Feature Importances**. The most important features in your data set.



> **Note:** Feature Importances is available for the Random Forest model only.

- **Training Log.** A report that includes the performance metrics and hyperparameter values.

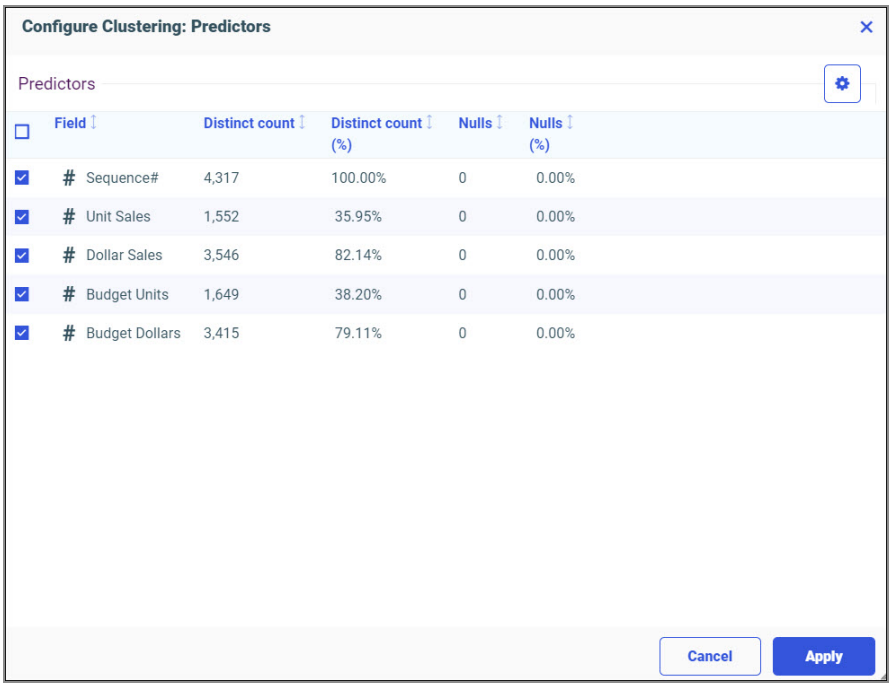
Train Clustering Models

These models produce cluster assignments, based on two different clustering algorithms: K-Means and BIRCH. K-Means uses different geometric properties of data points to assign them to clusters based on similarities. BIRCH is a hierarchical method that allows data points to be in the same cluster if they are separated by a distance smaller than a set threshold distance. Both clustering model types run at the same time with default hyperparameters.

Procedure

1. Double-click or drag the Clustering model to the canvas.

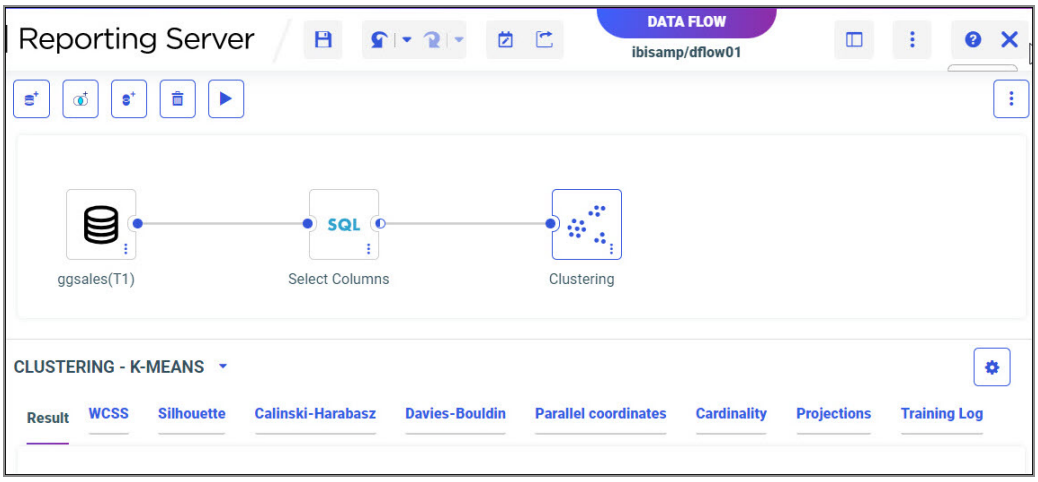
   The Configure dialog displays, as shown in the following image.



All numeric field measures are selected by default as Predictors. You can add or remove Predictors by selecting or unselecting the checkboxes.

2. Click **Apply**.

   Your selected model type appears on the dataflow canvas, as shown in the following image.

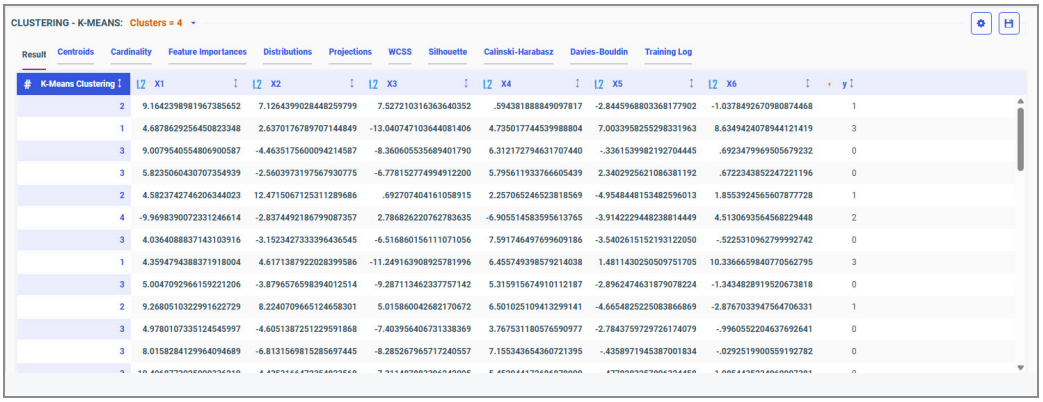


3. Click the **Train and Predict** icon ▶ to train your model.

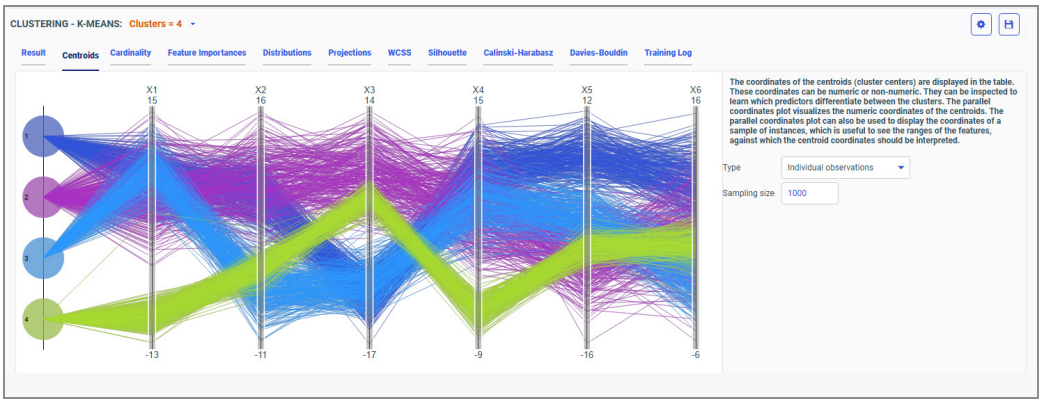
4. Your model data displays according to your model algorithm. You can select the K-MEANS Clustering or BIRCH Clustering algorithm from the dropdown menu. The best algorithm is selected by default.

   Your model data displays in the following tabs, using the K-Means algorithm.

   - **Result.** A preview of the first 50 rows of your new data set. Target and predicted columns are highlighted in yellow.



   - **Centriods.**In clustering, centroids represent the central points for each identified group of data points. The coordinates of these cluster centers, whether numeric or non-numeric, are displayed in a table and can be inspected to understand which predictors differentiate the clusters. The parallel coordinates plot visually represents the numeric coordinates of the centroids, and can also show a sample of individual observations to help interpret the feature ranges.



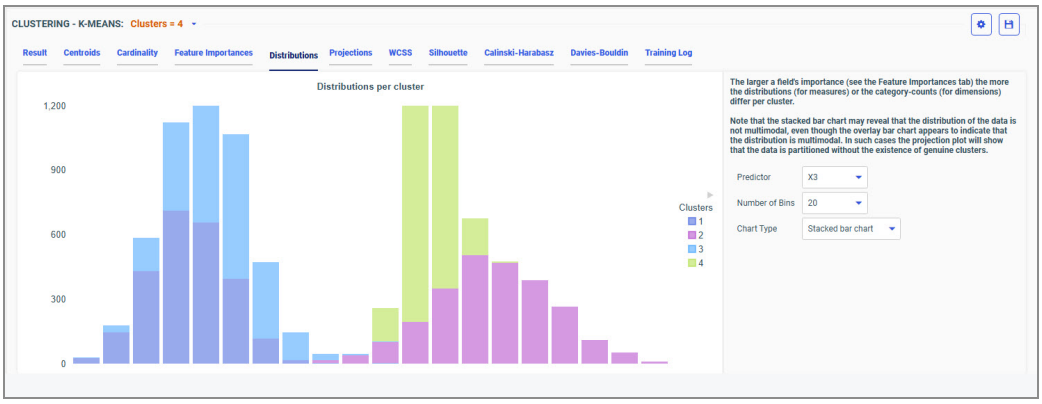
   - **Cardinality.** The Cardinality plot illustrates the number of data points, or

members (rows in the data) per cluster. This visualization helps identify if some clusters are very small and thus may be regarded as clustered outliers rather than useful clusters.

- **Feature Importances**:Feature importances for clustering are calculated using an auxiliary multiclass random forest classification model. This model is trained with the cluster labels, generated by the clustering method, as its target field. Because clustering partitions the predictor space into simple, non-overlapping areas, the random forest classifier consistently performs well, making its feature importances directly relevant to the clustering. This tab indicates which features are most effective in distinguishing between clusters.

- **Distributions**: The Distributions plots offer detailed insights into how feature values are distributed among identified clusters. These plots are ordered by feature importance, meaning fields with greater importance show more significant differences in their distributions (for measures) or category counts (for dimensions) per cluster. While an overlay bar chart might suggest a

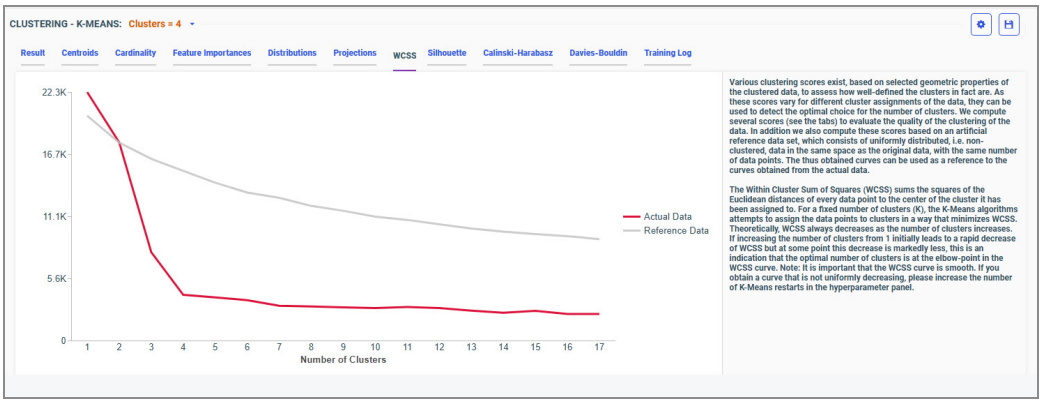
multimodal distribution, a stacked bar chart can reveal if the data's overall distribution is not truly multimodal, which, in turn, indicates that the projection plot shows data that is partitioned rather than having genuine clusters.



- **Projections**: The Projections tab helps you explore if K clusters, existing in an N-dimensional dataspace, remain distinct when projected onto a 2-dimensional plane spanned by two numeric columns. While projecting high-dimensional data often causes clusters to overlap, this visualization allows you to see if a subset of clusters (k < K) survives the projection without being projected on top of each other.

- **WCSS**: The Within Cluster Sum of Squares (WCSS) assesses how well-defined clusters are, based on geometric properties of the clustered data. It sums the squares of the Euclidean distances of every data point to its assigned cluster center. The K-Means algorithm aims to minimize WCSS for a fixed number of clusters. WCSS theoretically decreases as the number of clusters increases. A rapid initial decrease in WCSS, followed by a markedly slower decrease, indicates that the optimal number of clusters is at this "elbow-point" in the

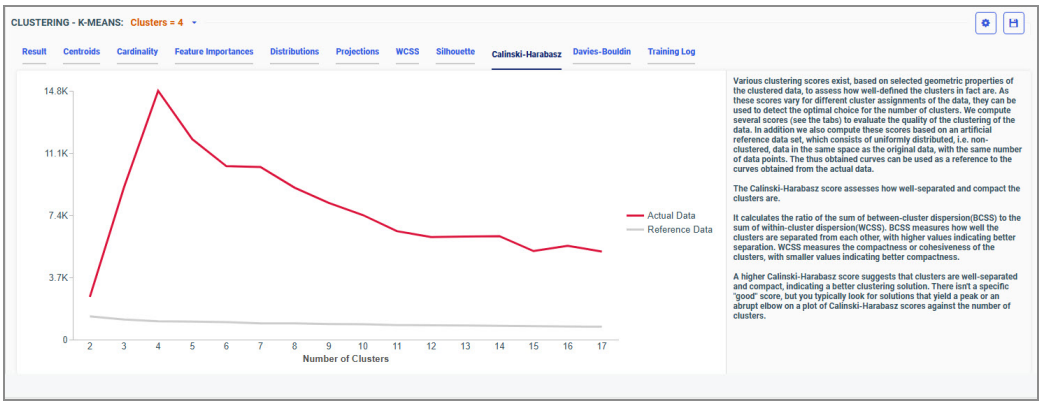
WCSS curve. For a smooth WCSS curve, it is important to ensure a sufficient number of K-Means restarts in the hyperparameter panel.



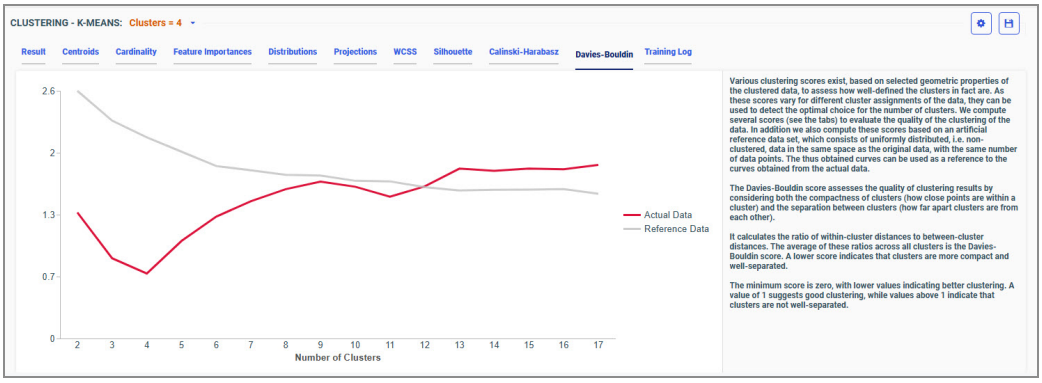
- **Silhouette**: The Silhouette score assesses cluster quality by evaluating both cohesion and separation. It compares a data point's average distance to other points within its own cluster (a) against its average distance to points in the nearest neighboring cluster (b). The score, calculated as s=(b−a)/max(a,b), ranges from -1 to +1. A score near +1 indicates a well-clustered data point distant from other clusters, a score near 0 suggests a data point on the borderline between clusters, and a score near -1 implies potential misassignment to the wrong cluster.

- **Calinski-Harabasz**: The Calinski-Harabasz score assesses how well-separated and compact clusters are. It calculates the ratio of the sum of between-cluster dispersion (BCSS) to the sum of within-cluster dispersion (WCSS). BCSS measures how well clusters are separated, with higher values indicating better separation. WCSS measures cluster compactness or cohesiveness, with smaller values indicating better compactness. A higher Calinski-Harabasz score

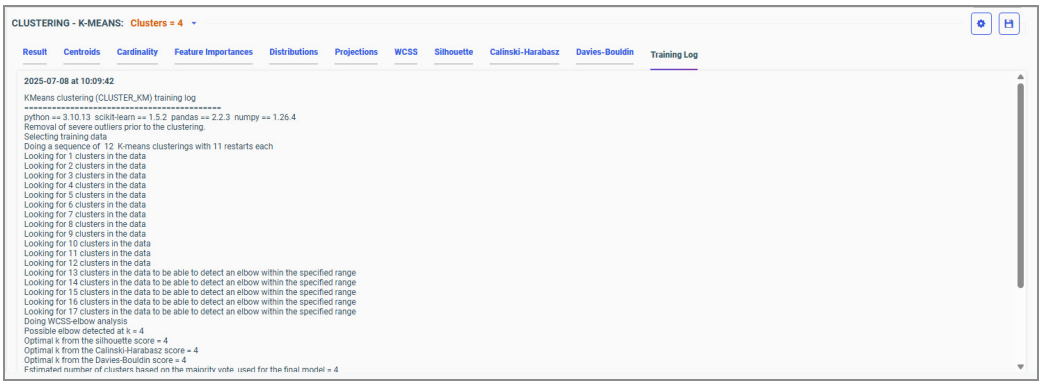
suggests well-separated and compact clusters, indicating a better clustering solution. There is no specific good score, but a peak or abrupt elbow on a plot of Calinski-Harabasz scores against the number of clusters is typically sought.



- **Davies-Bouldin**: The Davies-Bouldin score assesses clustering quality by considering both cluster compactness and separation. It calculates the ratio of within-cluster distances to between-cluster distances, with the average of these ratios across all clusters forming the score. A lower score indicates more compact and well-separated clusters. The minimum possible score is zero, and lower values signify better clustering, while values above 1 suggest poorly separated clusters.



- **Training Log**: The Training Log tab provides a report that includes the performance metrics and hyperparameter values used during the model training.



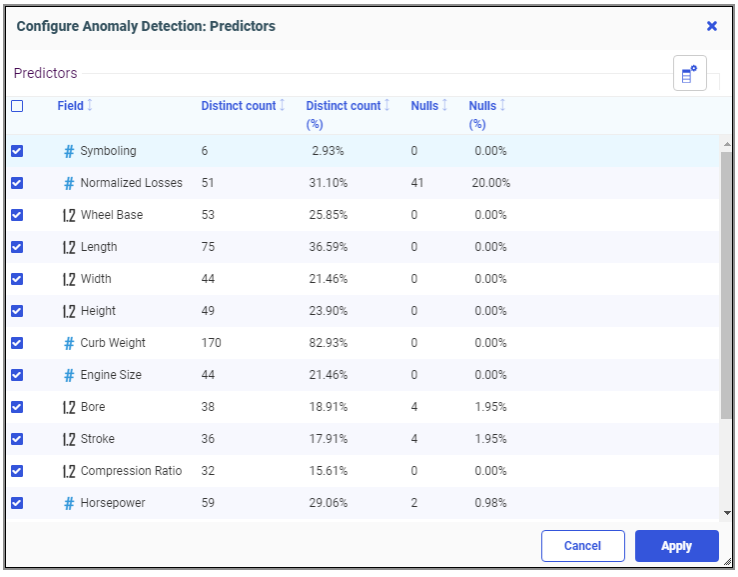
Train Anomaly Detection Models

These models detect anomalies, based on clustering algorithm like Isolation Forest and based on deep learning algorithm like Auto Encoder.

Procedure

1. Double-click or drag the Anomaly Detection model to the canvas.

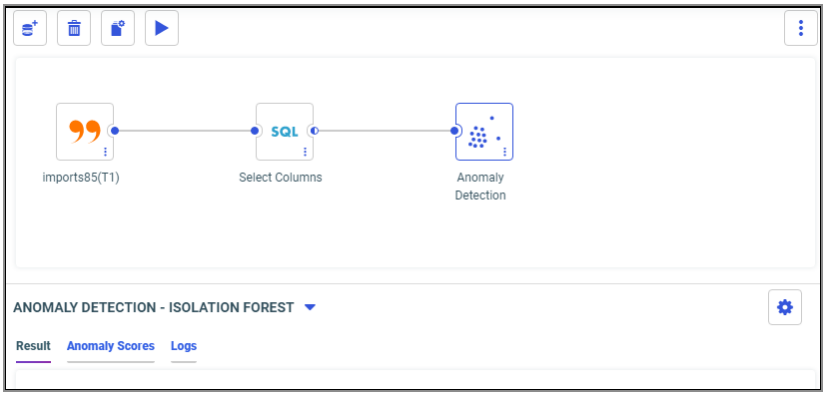
   The Configure dialog displays, as shown in the following image.



   All numeric field measures are selected by default as Predictors. You can add or remove Predictors by selecting or unselecting the checkboxes.

2. Click **Apply**.

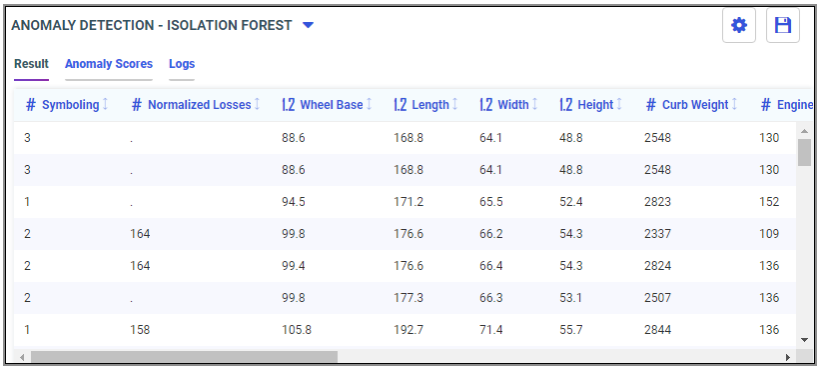
Your selected model type appears on the dataflow canvas, as shown in the following image.



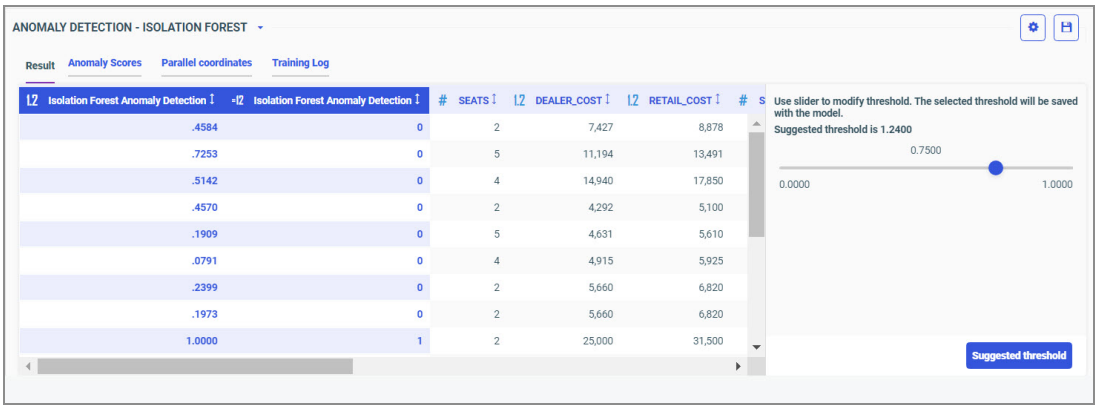
3. Click the **Train and Predict** icon to train your model. You can select between Isolation Forest and Auto-Encoder using the dropdown.

   Your model data displays in the following tabs after training model process is finished, using the Isolation Forest model algorithm.

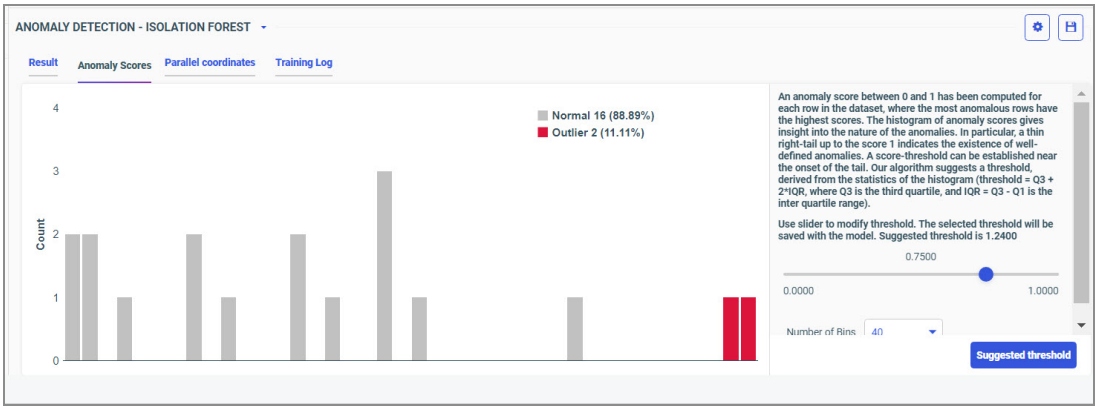
   - **Result.** A preview of the first 50 rows of your new data set.



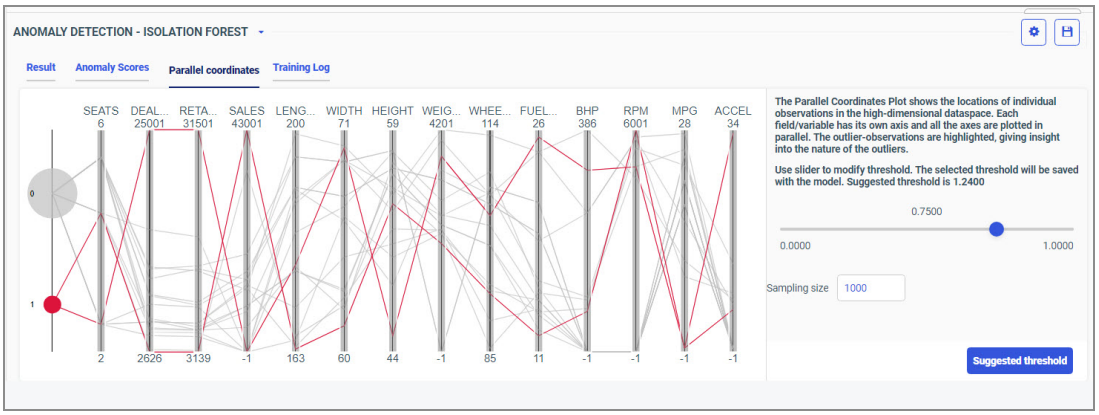
# Symboling	# Normalized Losses	12 Wheel Base	12 Length	12 Width	12 Height	# Curb Weight	# Engine
3	.	88.6	168.8	64.1	48.8	2548	130
3	.	88.6	168.8	64.1	48.8	2548	130
1	.	94.5	171.2	65.5	52.4	2823	152
2	164	99.8	176.6	66.2	54.3	2337	109
2	164	99.4	176.6	66.4	54.3	2824	136
2	.	99.8	177.3	66.3	53.1	2507	136
1	158	105.8	192.7	71.4	55.7	2844	136



- **Anomaly Scores.** A chart that demonstrates the accuracy of the selected model.

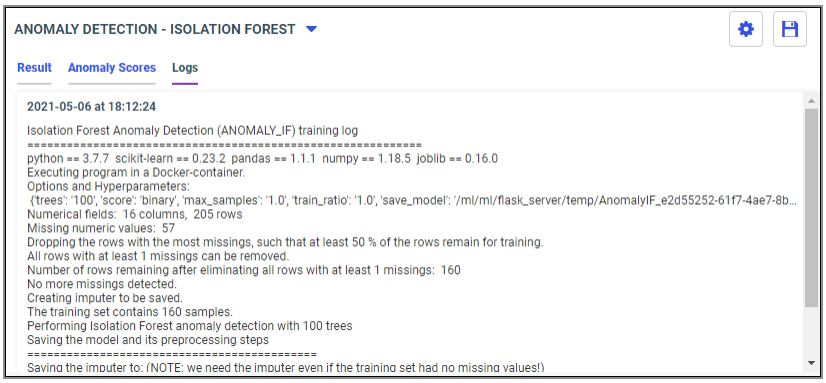


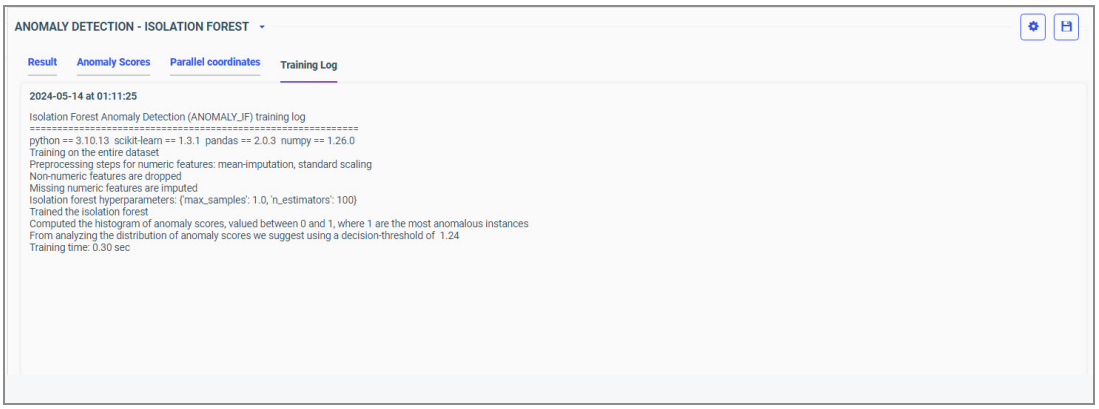
- **Parallel Coordinates.** Shows the locations of individual observations in the high-dimensional dataspace.



- **Training Log.** A report that includes the performance metrics and

hyperparameter values.





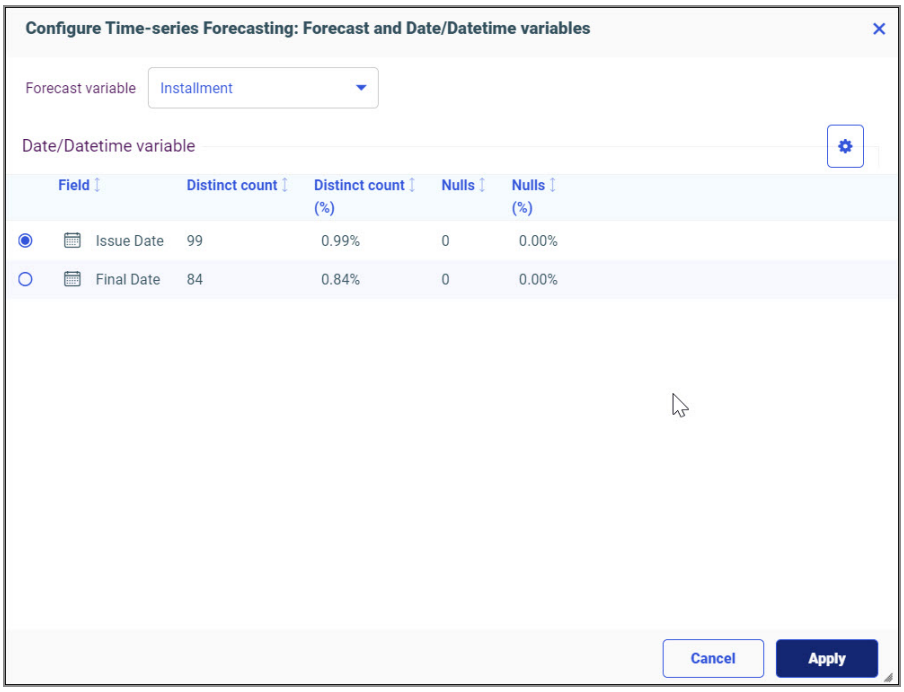
Train Time-Series Forecasting Models

These models produce time-series forecasts based on the forecasting algorithm: Auto-SARIMA, Holt-Winters, Dense Neural Network, Prophet.

Procedure

1. Double-click or drag the Time-Series Forecasting model to the canvas.

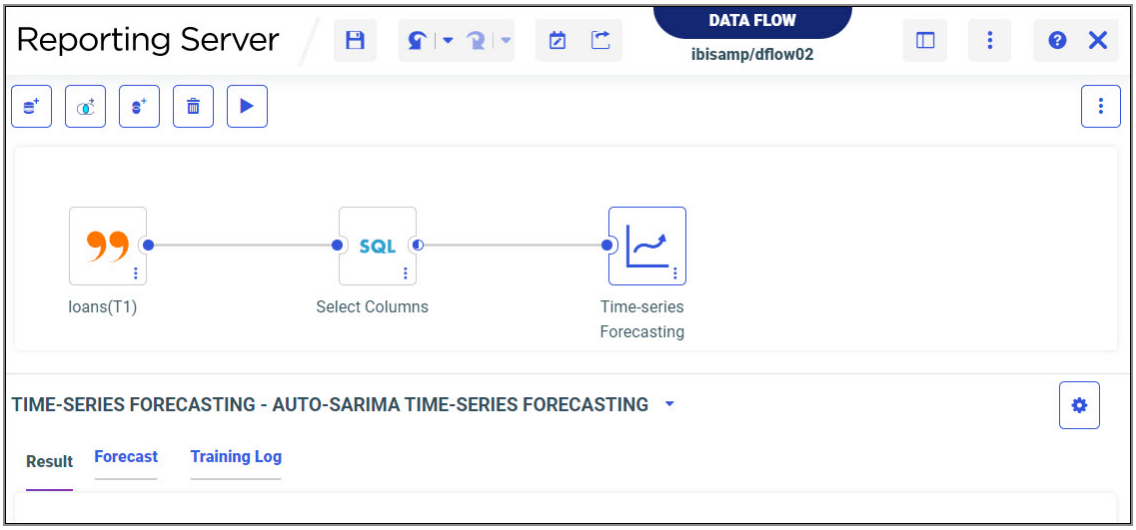
   The Configure dialog displays, as shown in the following image.



You can click the Forecast dropdown menu to select a different Forecast variable. You can choose a Date/Datetime variable by selecting its radio button.

2. Click **Apply**.

   Your selected model type appears on the dataflow canvas, as shown in the following image.



3. Click the **Train and Predict** icon ▶ to train your model.

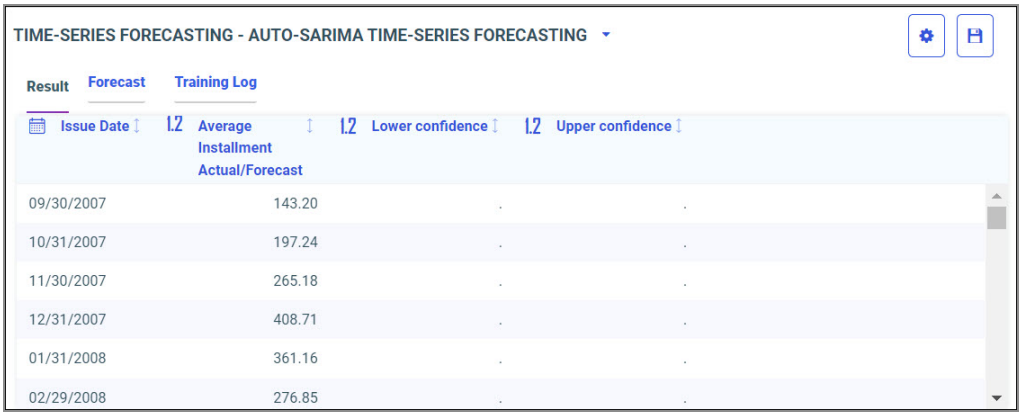
The training of the various models is done in parallel, allowing you to easily compare results and determine which model is best. You can filter which model comparisons you want to see by selecting or clearing the model checkboxes.

The following image shows the comparison between two models.

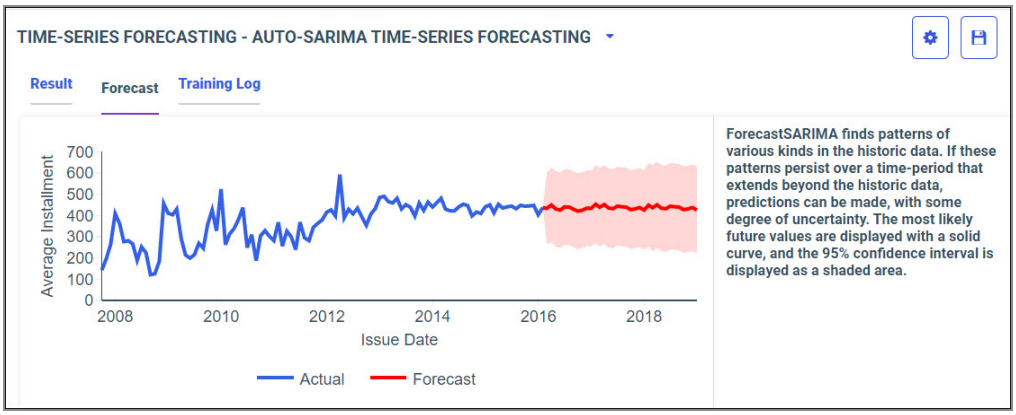
4. Close the Compare Model Evaluation Results dialog to return to the canvas.

   Your model data displays in the following tabs.

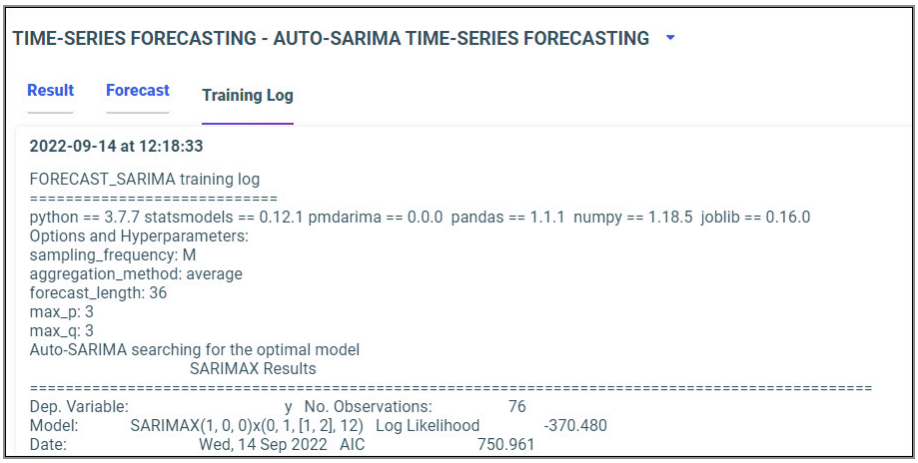
   - **Result.** Shows the forecast results of your datetime variables.



   - **Forecast.** ForecastSARIMA finds patterns of various kinds in the historic data. If these patterns persist over a time period that extends beyond the historic data, predictions can be made, with some degree of uncertainty. The most likely future values are displayed with a solid curve, and the 95% confidence interval is displayed as a shaded area.



- **Training Log.** A report that includes the performance metrics and hyperparameter values.



Edit Predictive Models

Before or after your model is trained, you can edit your model target, predictors, or datetime variables, depending on your model type. You can also edit the default parameters unique to each model.

To edit your model target and predictors, right-click the canvas model node, point to **Edit Settings**, and then click **Target and Predictors**, or for Time-Series forecasting models, click **Forecast and Date/Datetime variables**.

To edit your model parameters, right-click the canvas model node, point to **Edit Settings**, point to **Parameters and Hyperparameters**, and then click your model algorithm type. For Time-Series forecasting models, the Sampling frequency parameter **Week** may not work with your dataset, and is an Advanced option.

Note: For Time-Series forecasting models, if the chosen parameter for Sampling frequency is too long, it may result in too few data points to produce reliable statistics. In this case, the algorithm modifies the sampling to a shorter frequency, for example, from **Year** to **Quarter**, and redo the analysis. Sampling frequency modifications are reported in the training log.

You can also click the Model Editor icon to change targets, predictors, and parameters.

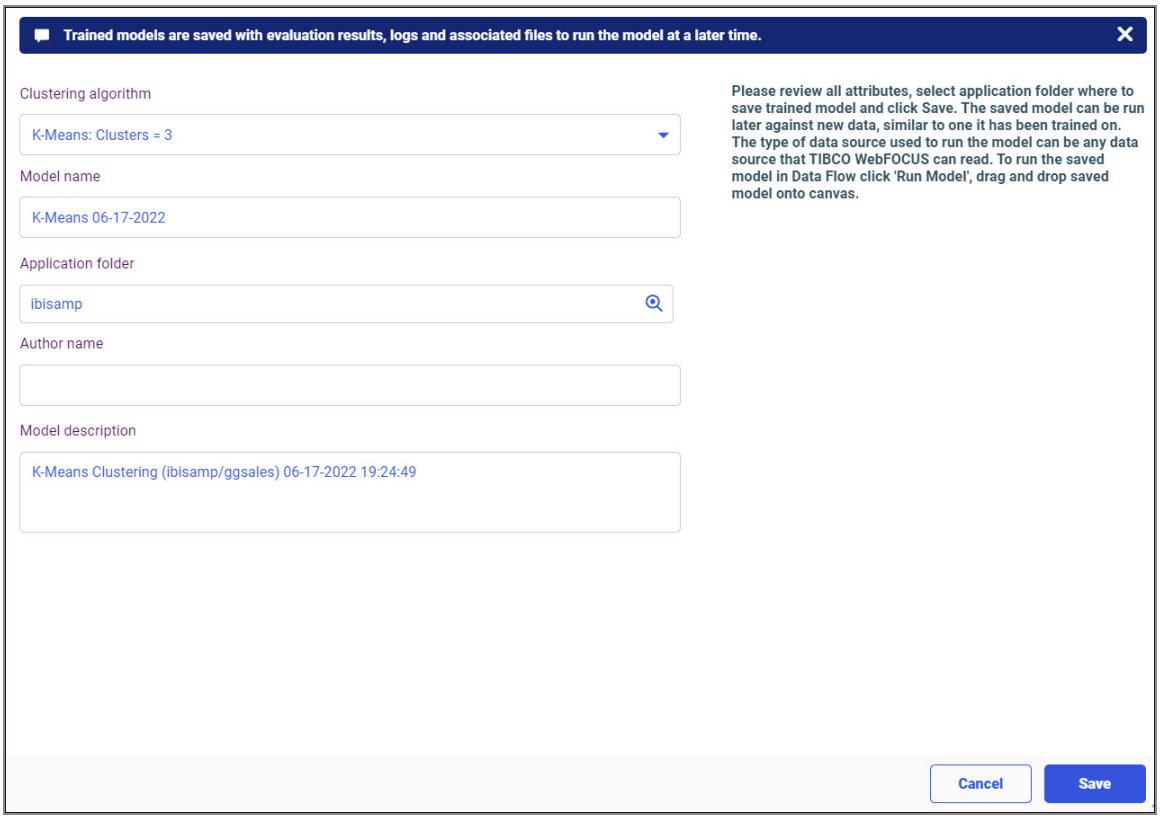
Save Predictive Models

When training a model, you can save it from the Compare Model Evaluation Results dialog. After running a model, you can save it from the tabbed panel beneath the canvas. You can then re-run your saved model against new data sets.

Procedure

1. Click the **Save** icon to save your model.

   The Save dialog opens, as shown in the following image.



You can change the model algorithm, name, or location, and add a description.

2. Click **Save**.

   Your model is saved to your selected folder location.

   Your saved model can be run later against new data that is similar to the data it was trained on.

Running Predictive Analytics on Your Data in WebFOCUS Designer

When creating a data flow in the Data tab, you can easily run predictive analytics on your data sets using Machine Learning functions, without prior knowledge of advanced statistics.

Train, run, evaluate, and compare predictive models, then choose the one you want to save. Later you can run your saved model against new data sets.

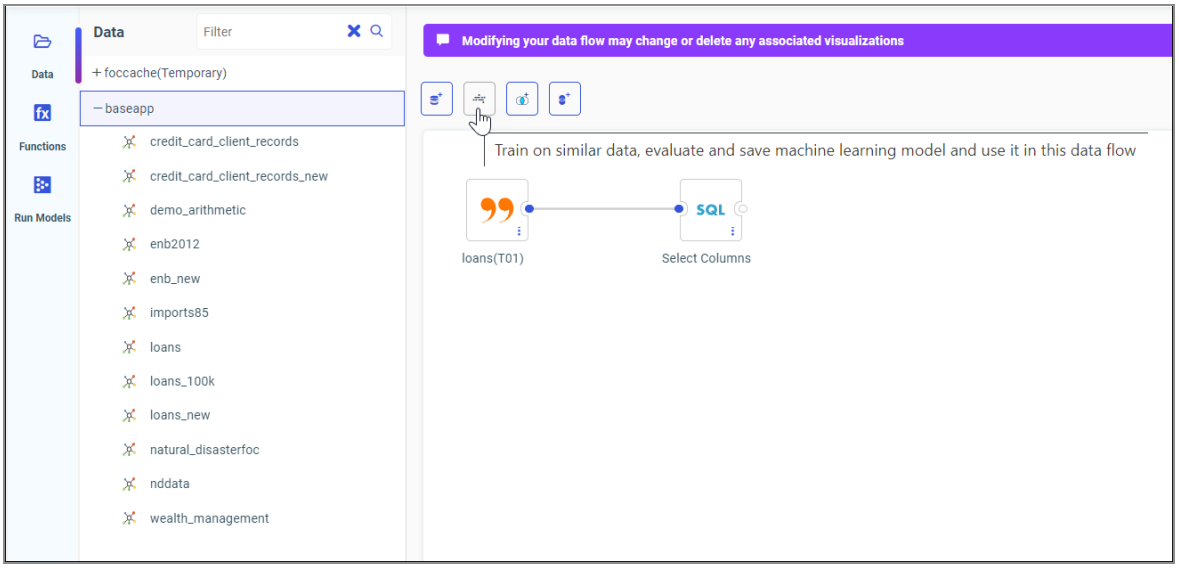
Access Predictive Models

After you create a Data Flow, you can select from different model algorithms to run against your data set.

Procedure

1. From the WebFOCUS Hub, click the plus menu, and then click **Create Visualizations**.
2. Select a data source from the dialog.
3. Click **Prepare/Extract Data**.

   Your data source opens in the Data tab.
4. Click the **Train Models** icon, as shown in the following image.

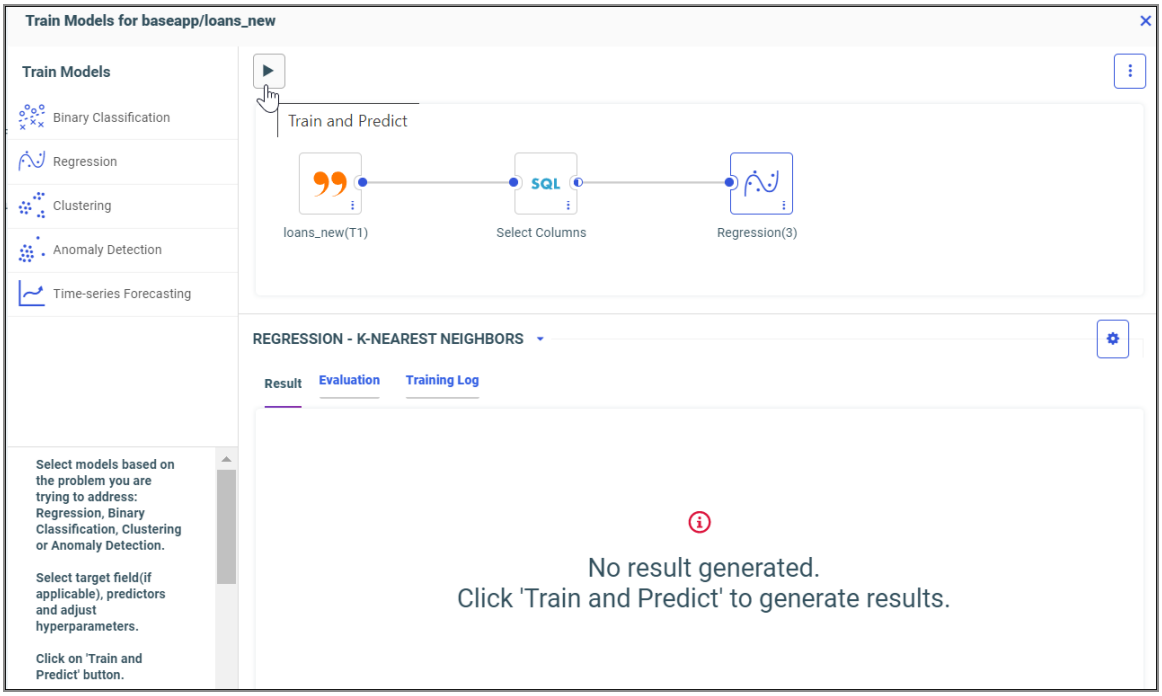


   A file directory dialog opens.
5. Select a file with similar data on which you can train your data and create a predictive model.
6. Click **OK**.
7. Double-click or drag a model type from the Train Models panel onto the canvas.

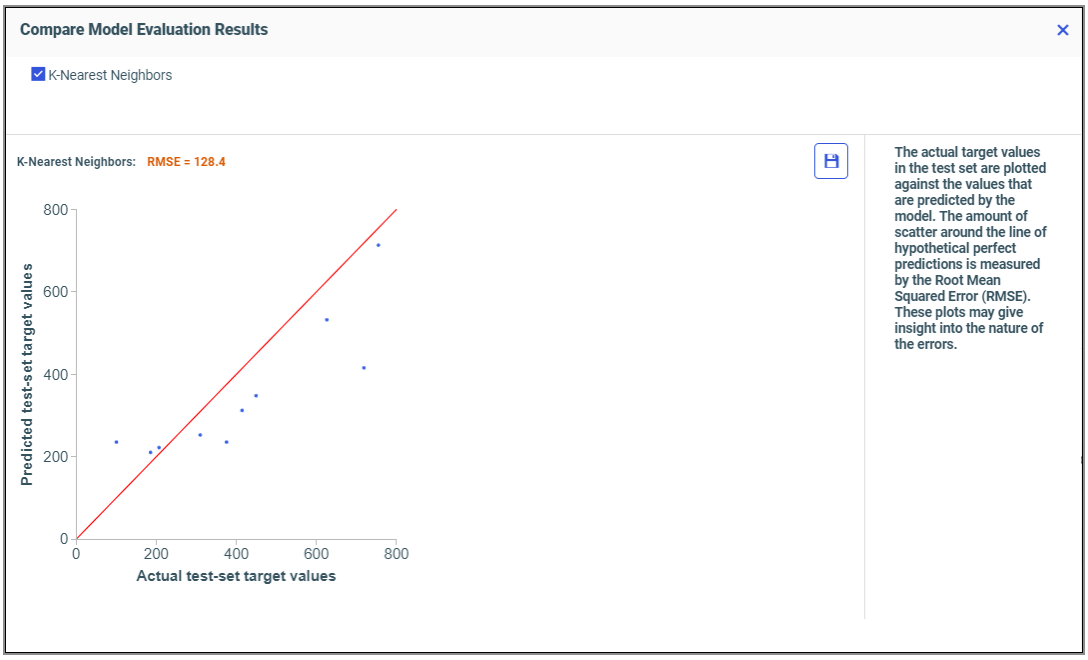
   A configure dialog displays. You can select a target, predictors, or datetime parameters, depending on your chosen model type. For more information on model types, see Running Predictive Analytics on Your Data.
8. Click **Apply**.

Your model, in this case a Regression model, is added to the workflow.

9. Click the **Train and Predict** button, as shown in the following image.



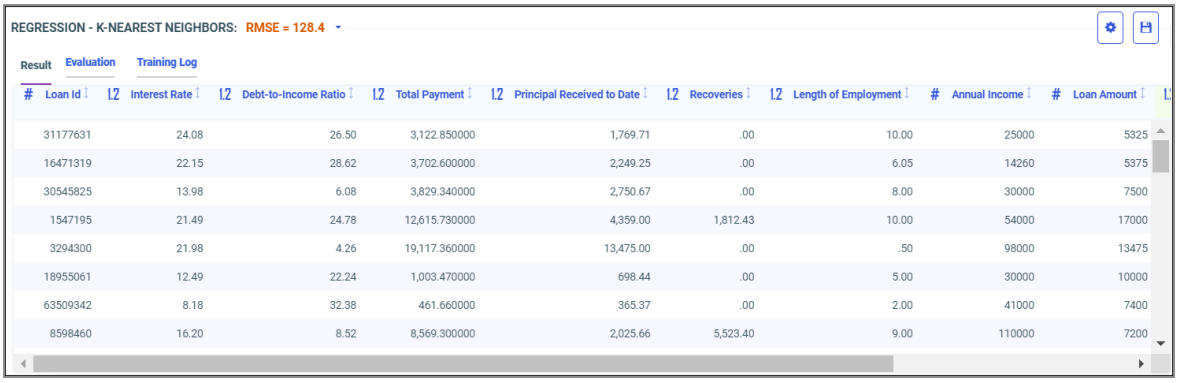
Your trained model is visualized in the Compare dialog, as shown in the following image.



Review the performance of the trained model. If there is more than one visualization, you can compare them and select the best one to save. You can save your model by clicking the **Save** icon in the dialog.

10. Close the dialog to return to the data tab.

    Your model data displays in different tabs in the sample data panel, as shown in the following image.



You can select different algorithm display options, according to your model type, from the model dropdown menu. The best algorithm is selected by default.

11. Click the **Save** icon from the sample data panel.

The Save dialog displays. You can review and change attributes, including the application folder where to save your trained model.

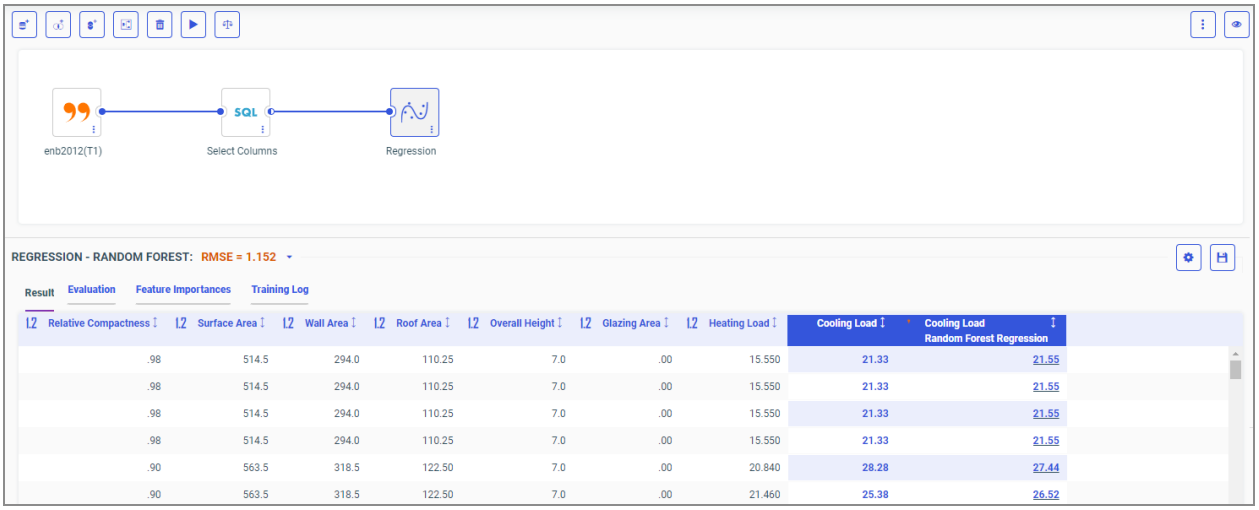
12. Click the dialog **Save** button.

> **Note:**
> The saved model can be run later against new data, similar to the one it has been trained on. To run your saved model in a Data Flow, click **Run Models** from the left panel, and drag and drop your saved model onto the canvas. For more information, see Run Datasets Against Saved Models.

Running Datasets Against Saved Models

After you train and save a predictive model, you can load it and run other datasets against it, to learn more about your data.

The following model which was previously trained and saved, predicts Cooling Load, as shown in the following image.



In the procedure below, a similar dataset that does not include a Cooling Load column is run against this predictive model, so the new target model predicts Cooling Load.

For more information about training and saving models, see Running Predictive Analytics on Your Data.

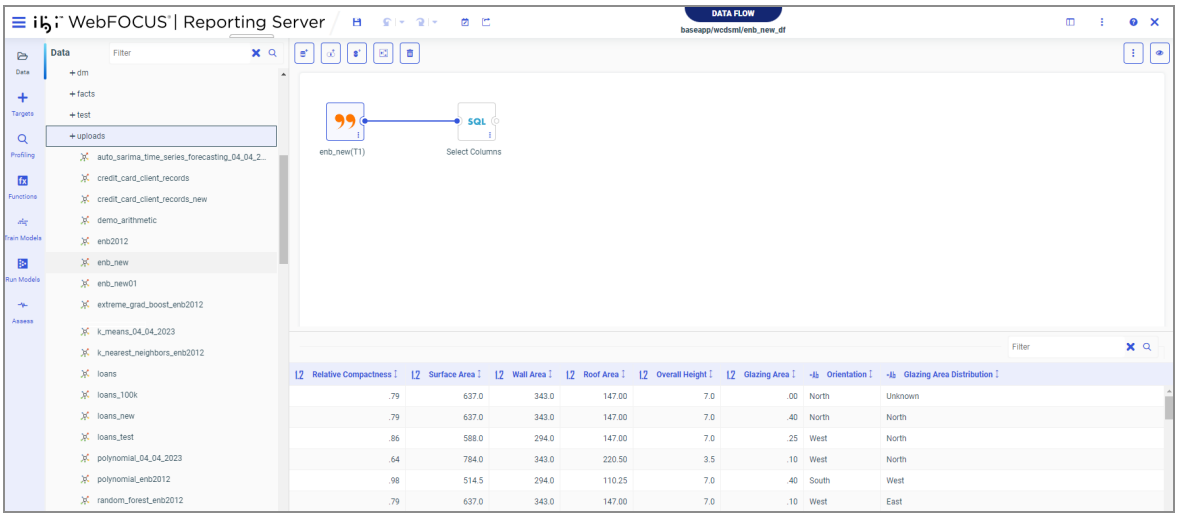
Run Datasets Against Saved Models

Procedure

1. From the WebFOCUS Hub, click the plus menu, and then click **Create Data Flow**.

   The WebFOCUS Reporting Server browser interface opens.

2. Select a dataset from an application and drag it onto the canvas, as shown in the following image.



   You can double-click the dataset to display sample data.

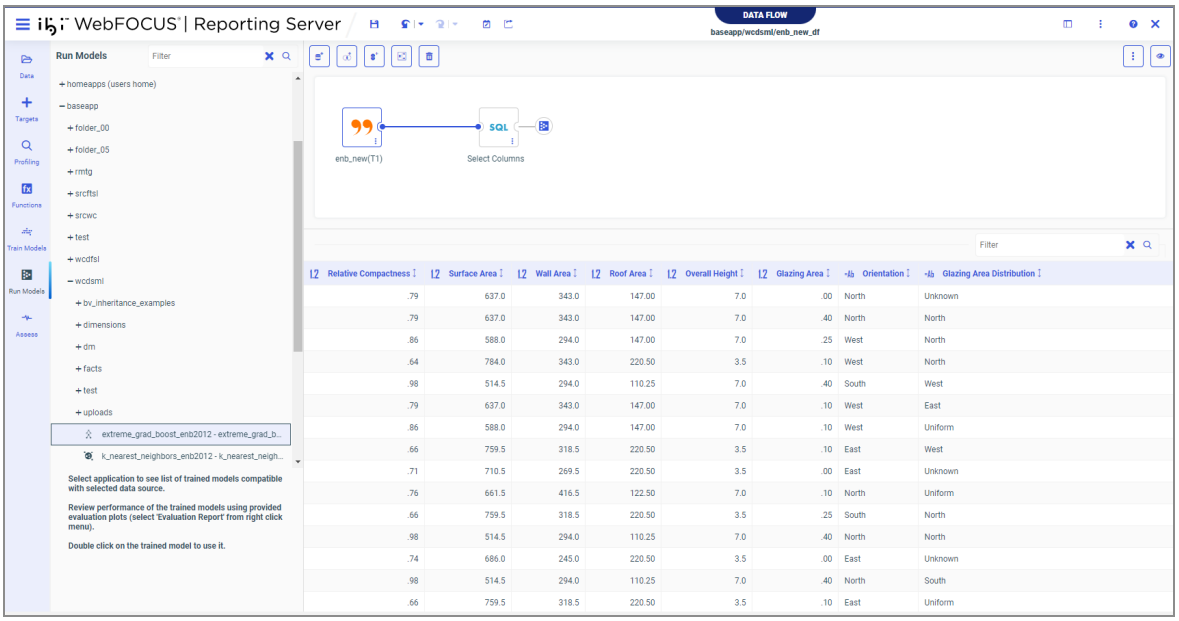
   > **Note:** The data sample does not include a Cooling Load column.

3. From the left panel, click **Run Models**.

   The Run Models directory opens and shows only models that are applicable to your data set.

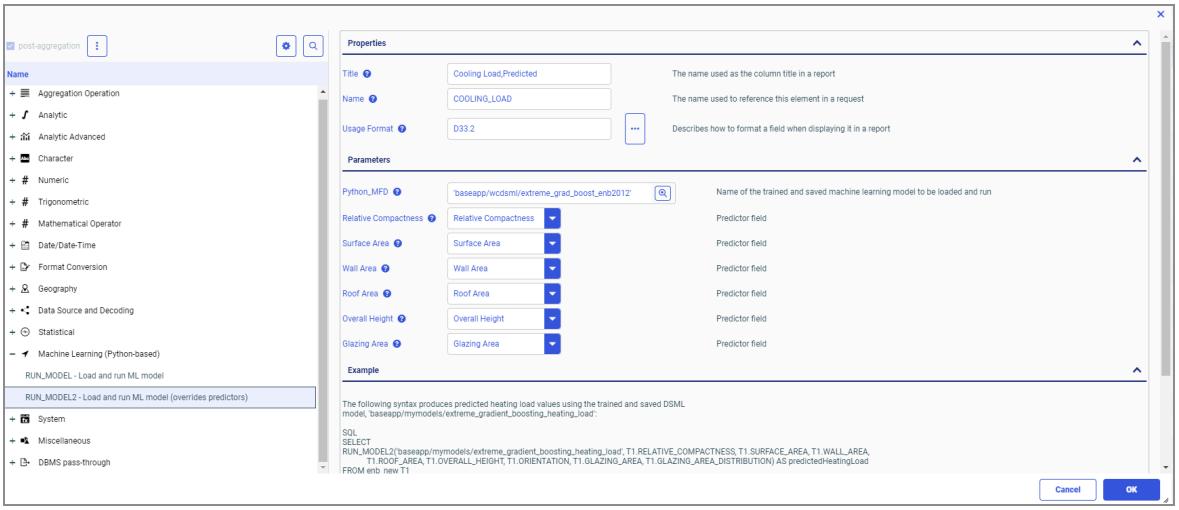
4. Double-click a model that you want to run your dataset against.

   A new function is defined based on this model, and a function icon is added to the end of the canvas workflow, as shown in the following image.



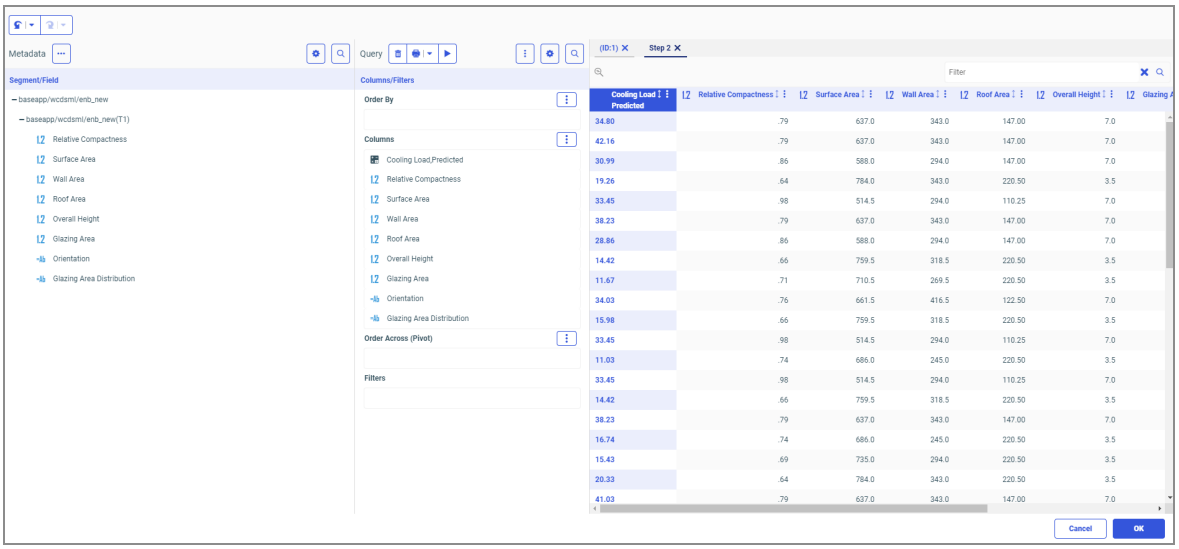
Note: You can select more than one model to design a function.

5. To view and edit the function, click the function icon and select **Edit**. The function name, properties, and parameters are displayed, as shown in the following image.



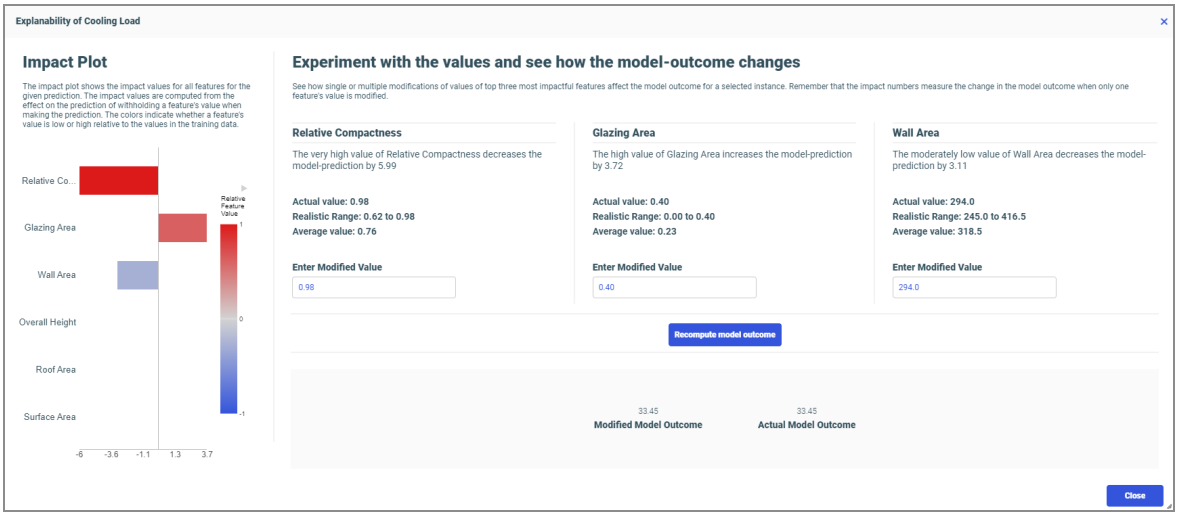
6. Update the function properties as required and click **OK**.

   The Metadata page displays, as shown in the following image. Notice that the Cooling Load Predicted column is now added to the sample data.



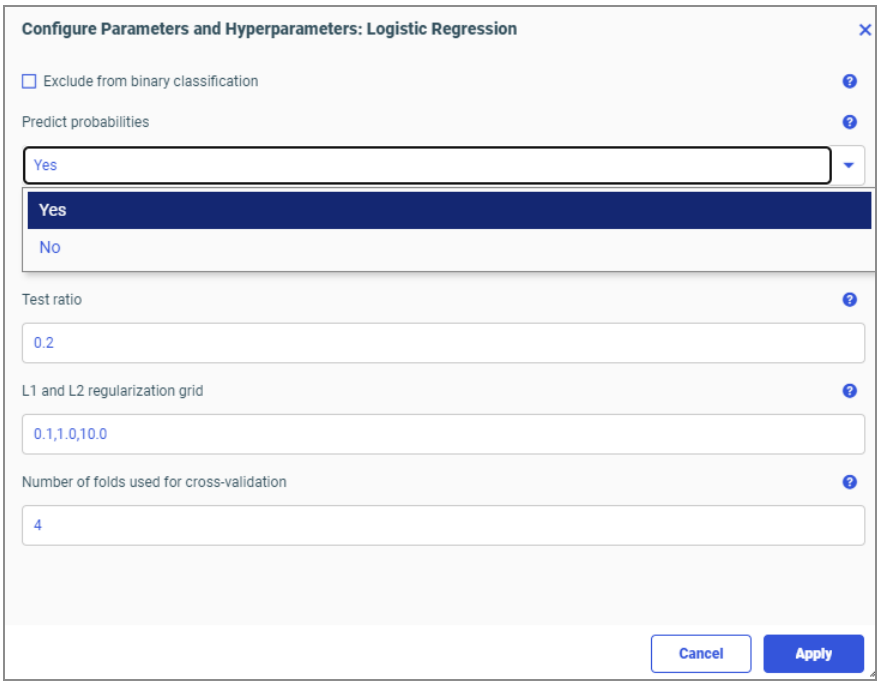
7. Click **OK** to save your changes.

> **Note:** For Binary Classification and Regression models, you can see how each value in the predicted column is generated. Click a value in the predicted column on the Metadata page. The Explainability screen displays, as shown in the following image.



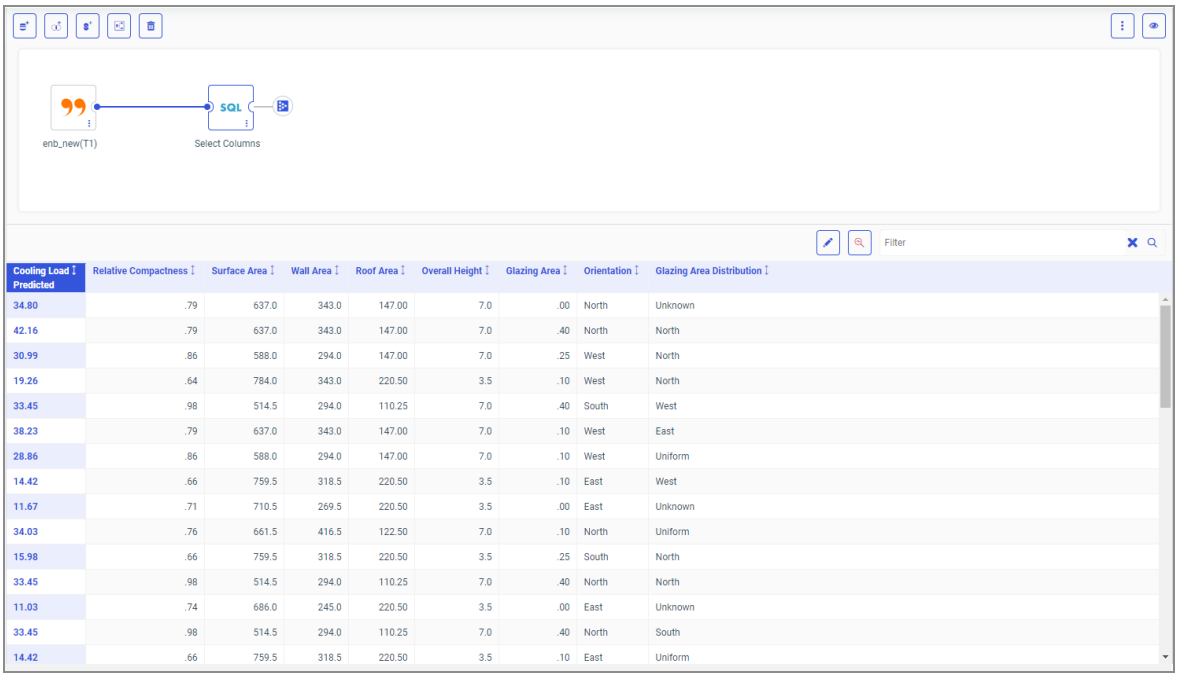
For a selected instance, you can see how single or multiple modifications to the values of the top three most impacting features affect the model outcome. Click **Close** to close this screen.

Note: To see the Explainability feature for a Binary Classification model, set the value of the Predict probabilities parameter to **Yes** in the Configure Parameters and Hyperparameters settings while training the Binary Classification model, as shown in the following image.



8. To run your dataset, right-click the SQL object and then select **Test**.

   You can see that the sample data includes a Cooling Load Predicted column, as shown in the following image.



Cooling Load Predicted	Relative Compactness	Surface Area	Wall Area	Roof Area	Overall Height	Glazing Area	Orientation	Glazing Area Distribution
34.80	.79	637.0	343.0	147.00	7.0	.00	North	Unknown
42.16	.79	637.0	343.0	147.00	7.0	.40	North	North
30.99	.86	588.0	294.0	147.00	7.0	.25	West	North
19.26	.64	784.0	343.0	220.50	3.5	.10	West	North
33.45	.98	514.5	294.0	110.25	7.0	.40	South	West
38.23	.79	637.0	343.0	147.00	7.0	.10	West	East
28.86	.86	588.0	294.0	147.00	7.0	.10	West	Uniform
14.42	.66	759.5	318.5	220.50	3.5	.10	East	West
11.67	.71	710.5	269.5	220.50	3.5	.00	East	Unknown
34.03	.76	661.5	416.5	122.50	7.0	.10	North	Uniform
15.98	.66	759.5	318.5	220.50	3.5	.25	South	North
33.45	.98	514.5	294.0	110.25	7.0	.40	North	North
11.03	.74	686.0	245.0	220.50	3.5	.00	East	Unknown
33.45	.98	514.5	294.0	110.25	7.0	.40	North	South
14.42	.66	759.5	318.5	220.50	3.5	.10	East	Uniform

Note: You can also see the Explainability by clicking a value in the predicted column in the sample data.

9. From the WebFOCUS toolbar menu, select **Save As** to save your model.

Using NLQ On Your Data

Natural Language Query, or NLQ, lets you ask questions of your data using everyday language. This provides you with valuable insights and allows you to make informed business decisions.

NLQ translates natural language into SQL code that can be run against a database. The natural language phrases are matched with a relevant database schema column within your data, and your query results are displayed as a table. A maximum of 50 columns can be processed.

Examples of natural language queries include:

- What are interest rates
- Show me income_category

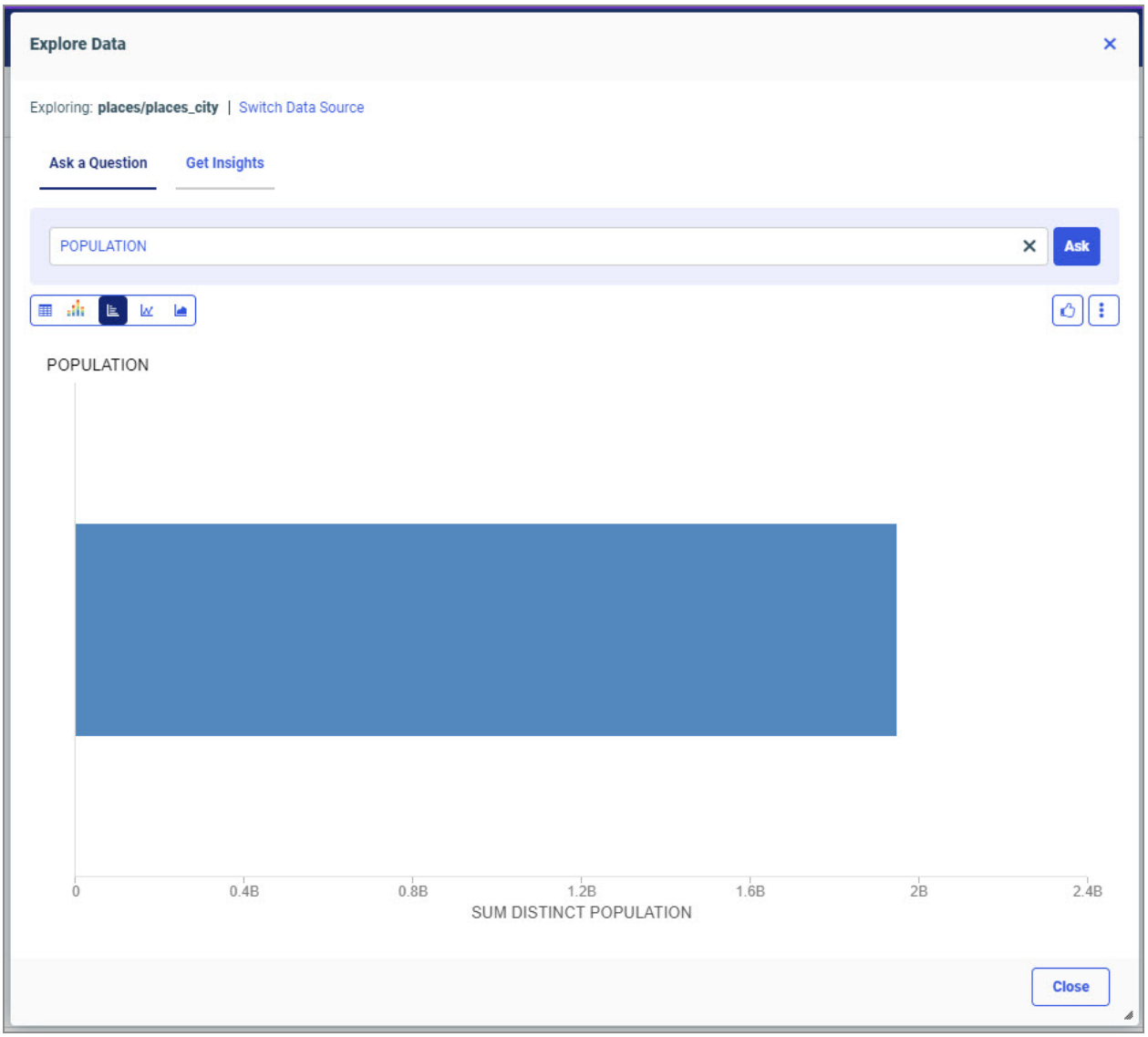
- Give me sales by product name
- Show me patients by doctor
- Give me an average loan by application_type
- Show me offices by city and country
- What is the total loan for low income category
- What is my revenue in June 2021

The NLQ engine understands the concept of time and supports different date formats. It supports one date/time column. You can refer to a date or date range in your queries, for example: sum profit for March 2013, or sum profit for March 1 2013 to March 14 2014. The following exact date formats are supported: YYYY-MM-DD; YYYY/MM/DD; MM/DD/YYYY; MM-DD-YYYY.

Note: If NLQ becomes unresponsive, you can restart your Java server to recycle the service. The recycle script uses nlp port9000, so any procedures already running on that port is ended. The script must be re-run by the same user for it to work.

Access NLQ from the ibi WebFOCUS Hub

You can access NLQ from the WebFOCUS Hub and make natural language queries against your data to gain insights. The following image shows the **Explore Data** window.



Procedure

1. From the WebFOCUS Hub, click the plus menu.
2. Click **Explore Data**.

   The Select Data Source dialog opens.
3. Navigate to your data source.
4. Click **Select**.

   The **Explore Data** dialog opens.

   The column names of your selected data source are displayed. You can choose a

different data source by clicking **Switch Data Source**.

5. Type a question about your data in the search field.

   Note: You can also get suggested questions for the selected data source by selecting **View suggestions**.

6. Click **Ask**.

   You can run your query results in a new window by clicking the output options button and selecting **Run in new window**.

   Note: If your query does not result in matching data, the NLQ engine will suggest rephrasing your query, and offer examples to model your queries after.

7. You can change the visualization of the searched query from the options available on the **Explore Data** window.
   For more information, see Changing the Visualization of Query.
8. Click **Close** to close the dialog and return to the Hub.

Save Your NLQ Results

When you use NLQ on your data, your results display as a table. You can easily save your results for future use.

Procedure

1. Click the output options button .
2. Select the **Save to workspace** option.

   The Save dialog opens, as shown in the following image.

   You can title your visualization and save it to a location you choose.

3. Click **Save**.

Note: When you save content from the **Explore Data** window, you can now reopen that content in Designer afterward and edit it.

Changing the Visualization of Query

Based on the query, the system defines the recommended visualization for the result and the result is generated in that visualized format. Currently we support Bar Chart and Line Chart Visualization formats. The recommendations are based on the following rules.

Format	Variables in the Dataset	Number of Records
Bar chart	An ordered data variable that can be identified as a dimension	Less than 21
Line chart	An ordered data variable that can be identified as a dimension A temporal data variable	Less than 50

Additionally, the visualized output can be changed to other formats like area chart or grid (table) view. This can be done from the chart switcher

Access NLQ from Application Directories

1. Select **Application Directories** from the Hub.
2. Navigate to the file which you want to generate insight.
3. Right-click the data and select **Get Insights**.
4. Select **Ask a Question** to provide search queries.
5. Use the **Fact** tables to switch between insights.
6. Select **Close** to exit from the **Explore Data** window.
7. Select **Tools** icon then select **View Insights Generation Status** to view the status of all insights.

NLQ Best Practices

The Natural Language Query (NLQ) feature in ibi WebFOCUS DSML Services allows interaction with data using everyday language. This feature translates questions into SQL

code to provide valuable insights for informed business decisions. To maximize the effectiveness and accuracy of NLQ results, framing questions in a truly natural, conversational manner proves essential.

Recommended Approach: Ask Questions Naturally

Instead of using concise, keyword-driven phrases that characterize queries in a reporting language, strive for complete and clear natural language sentences.

Examples of Proper Natural Language Queries:

- Instead of: "Sales by Country"

  Use: "What is the total sales in each country?"

- Instead of: "Budget Dollar Sales by Product Category"

  Use: "Show me the average budget dollar sales for each product category."

General Examples from NLQ:

- "What is my total revenue for each Product Category?"
- "Give me average sales by store location."
- "What is the average loan amount for each category of loan?"

Adopting these practices enhances the clarity and effectiveness of queries, leading to improved insights and data interaction.

Using NLQ On Your Data in ibi WebFOCUS Designer

Natural Language Query, or NLQ, lets you ask questions of your data using everyday language. This provides you with valuable insights and allows you to make informed business decisions.

NLQ translates natural language into SQL code that can be ran against a database. The natural language phrases are matched with relevant database schema columns within your data, and your query results display as a table.

Examples of natural language queries include:

- What is my total revenue
- Give me sales by product name
- Show me patients by doctor
- Show me offices by city and country
- What is my revenue in June 2021

Use NLQ in ibi WebFOCUS Designer

You can access NLQ from WebFOCUS Designer and make natural language queries against your data to gain insights.

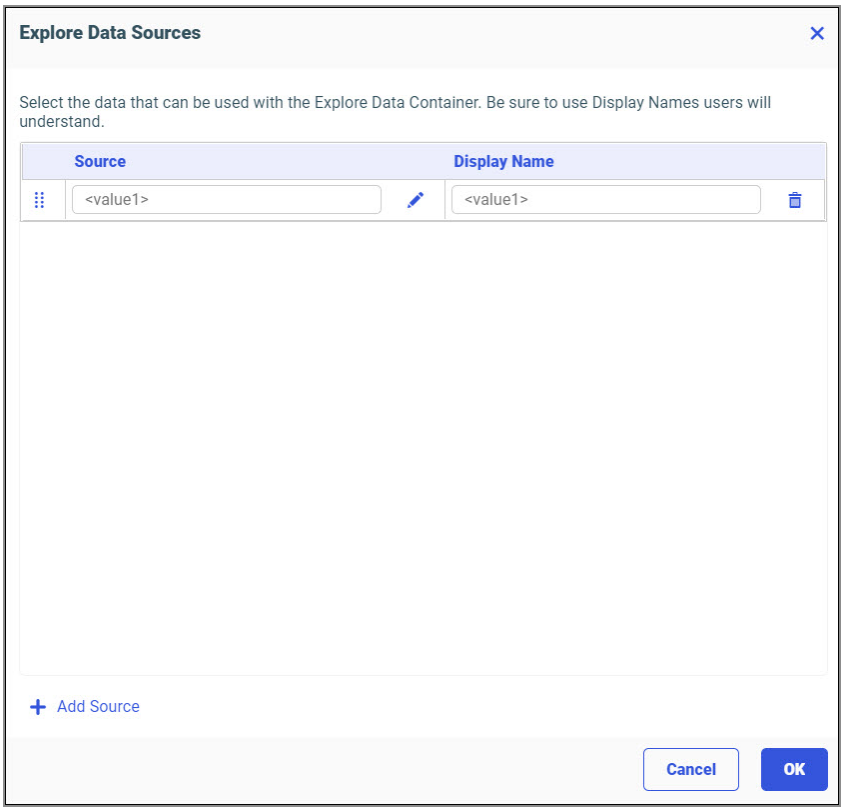
Procedure

1. From the WebFOCUS Hub, click the plus menu.
2. Click **Assemble Visualizations**.

   The Template dialog opens.
3. Select a page template.
4. Click **Container** on the sidebar.

   The Container tab opens.
5. Drag-and-drop or double-click on the **Explore Data** widget in the Container tab to add it to the canvas.

   The Explore Data Sources dialog opens, as shown in the following image.



6. Click the data source icon .

   The Select Data Source dialog opens.

7. Navigate to your data source.

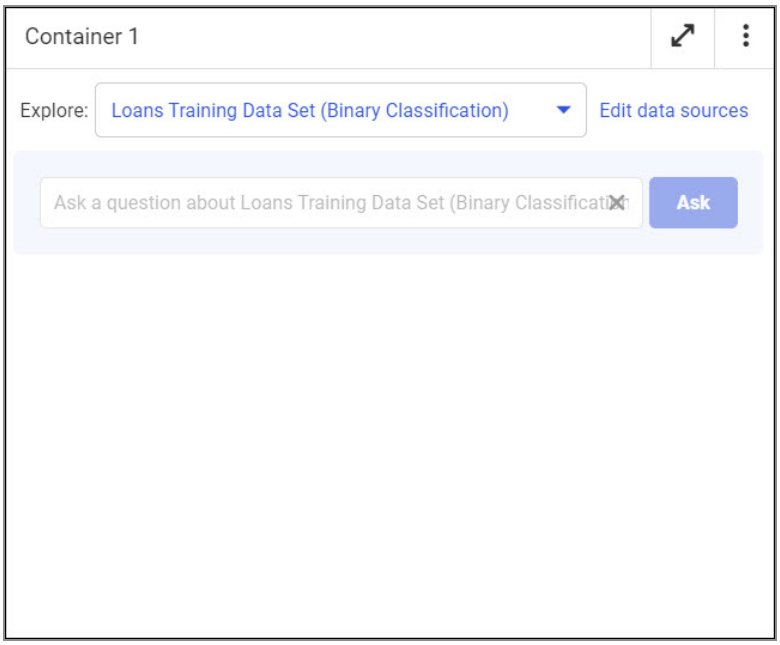
8. Click the **Select** button.

   Your data source is added to the Explore Data Sources dialog.

   You can click **Add Source** to select another data source.

9. Click **OK**.

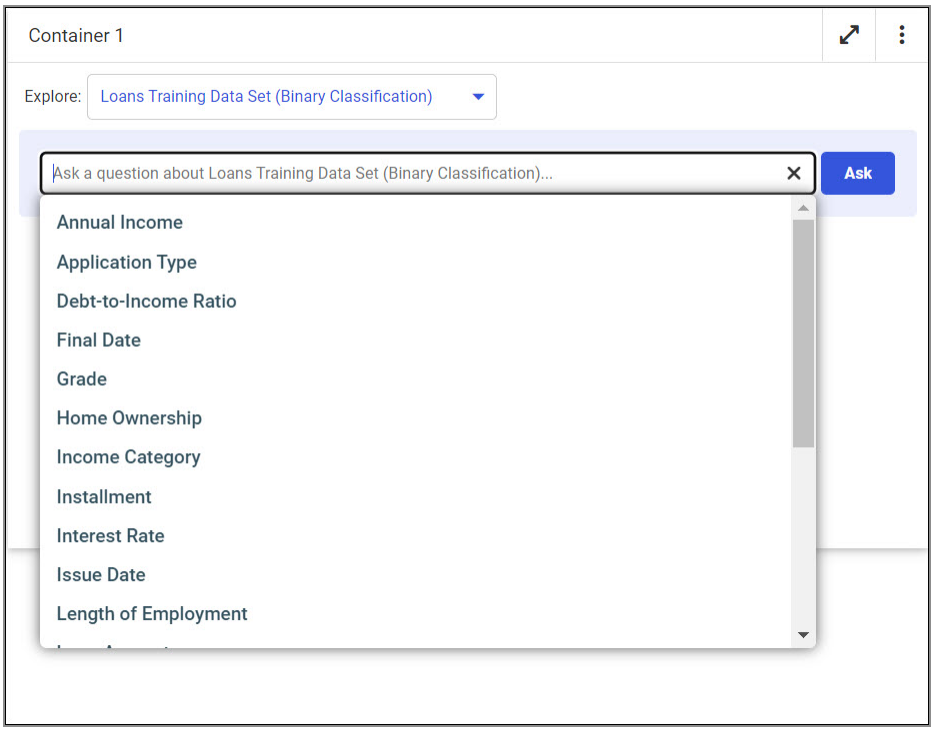
   Your data displays in the canvas container, as shown in the following image.



You can click **Edit data sources** in the container to return to the Explore Data Sources dialog.

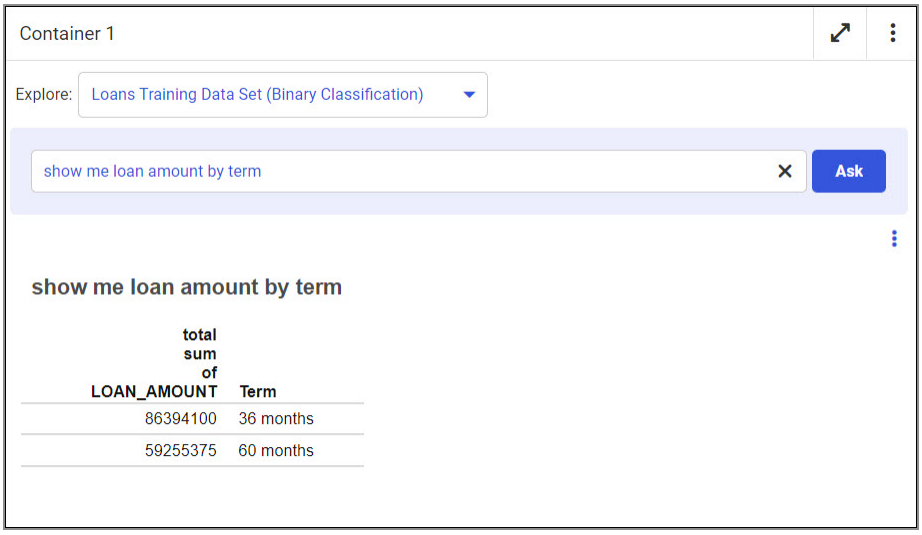
10. On the visualization toolbar, click the Run icon .

    Your data runs in a new window. The column names of your selected data source are displayed when you click inside the text field, as shown in the following image.



11. Type a query about your data in the text field. Relevant column names that match your phrase display as you type.
12. Click **Ask**.

    The result of your query displays as a table, as shown in the following image.



13. Click the output options button .

You can run your query results in a new window by selecting the **Run in a new window** option.

NLQ Error Codes

The following tables shows the errors you can encounter while using NLQ:

Error Type	Error Code
Server down	500
Irrelevant query	422
No valid SQL generated after 3 retries	422
NLQ timeout (model is running too long)	408
Service connection timeout (cannot connect to service)	504
NGINX is down	503

Visualizing Data

WebFOCUS Designer is a web-based development tool that you can use to quickly and easily create content from your data and use that content to create pages, within a single visualization or by assembling multiple distinct content items into a separate visualization. You can manage your data using data flows and use that data to create charts, reports, and interactive and responsive pages, all in one place.

Using WebFOCUS Designer, you can prepare raw data from a variety of sources in a data flow, and turn it into easily usable and understandable data sources for subsequent analysis. You can also join multiple data sources as if they were a single data source, and then create new content from your joined data. WebFOCUS Designer provides you with a simple, but powerful, set of features to create content directly within a visualization using a variety of chart types and tabular report layouts, allowing you to communicate the information in your data as effectively as possible. You can continue adding as much new content to a visualization as you want, each in its own container or grouped into multi-content containers using tab, accordion, or carousel behavior. Alternatively, you can create these pages using existing content such as charts, reports, images, and URLs that you have saved in your environment. With the interactive page canvas, you can resize and rearrange resources in the visualization into your preferred layout. Additionally, interactive filter behavior allows you to control the display of data in the visualization with ease, and In-Document Analytic capabilities allow you to continue interacting with your content beyond design time.

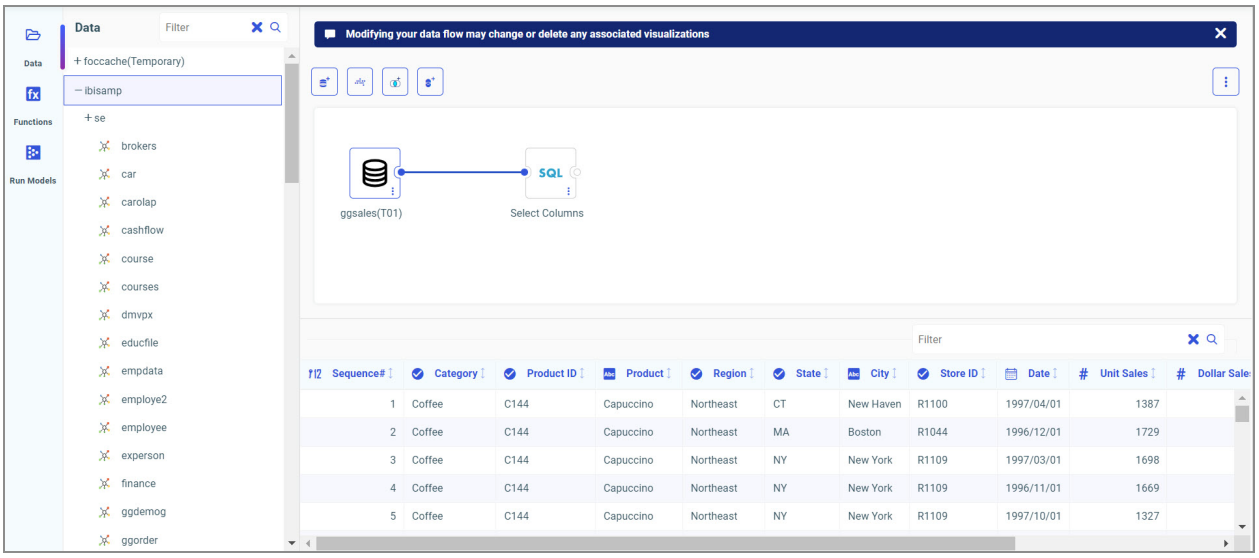
Navigating the ibi WebFOCUS Designer Interface

WebFOCUS Designer is divided into a Data tab, which provides options to prepare, profile, and join your data sources, and a Visualization tab, where you can create charts and reports using that data and arrange your content on a page. When creating a visualization with existing content, only the Visualization tab is available, since you do not specify a data source.

Using the Data Tab

In the Data tab you can create and define a data flow. A data flow contains the parameters for extracting information from data sources and loading it into data targets. Modifying your data flow may change or delete any associated visualizations from the Visualization tab.

The WebFOCUS Designer Data tab with a data source on the canvas is shown in the following image.



The Data tab includes the following tools and components.

- **WebFOCUS Designer Toolbar.** Provides features that affect the entire data flow and visualization. It includes the following options:
  - **Application menu.** Includes the following options:
    - **New.** Creates a visualization in WebFOCUS Designer.
    - **Open.** Opens an existing chart, report, page, or visualization in WebFOCUS Designer.
    - **Save.** Saves the current visualization.
    - **Save As.** Saves the current visualization as a new file.
    - **Close.** Closes WebFOCUS Designer.
  - **Advanced Options.** Includes diagnostic information to help you validate and troubleshoot your data flow. The following options are available:

        - **View Source.** Displays the source syntax of the data flow, including all synonyms and joins.
        - **Session Log.** Opens the Session Log dialog, which includes a record of server configuration and activity.
        - **Clear Session Log.** Deletes all entries from the session log.
        - **Autorun.** Provides option to change the sample data output window setting. The default setting is On.
        - **Diagnostics.** Displays an override report.
        - **Clear Undo/Redo History.** Deletes all undo and redo records.
    - **Undo.** Undoes the previous action.
    - **Redo.** Available when you have undone an action. Redoes the last undone action.
    - **View.** Allows you to hide or show the Join Editor and Resources tree.
- **Sidebar.** Each tab in the sidebar displays a related set of resources and options in the Resources panel.
    - **Data.** Shows your available data sources.
    - **Functions.** Shows available functions for your data.
    - **Run models.** Allows you to select a saved predictive model to run your data against. For more information, see How to Run Datasets Against Saved Models.
- **Resources panel.** Allows you to select synonyms from your application path to be used in your data flow.
- **Canvas.** Shows the tables in your data flow. You can drag a synonym from the Resources tree onto a data source in the canvas to create a join.
- **Canvas toolbar.** Provides options to configure your data flow or the canvas interface. The following options are available:
    - **Get Data.** Opens the Get Data dialog, where you can select additional data sources to be joined with your original data source.
    - **Train Model.** Trains your data against similar data, allowing you to evaluate and save a predictive model for use in the data flow. For more information about predictive models, see Running Predictive Analytics on Your Data.

- **Insert Join.** Displays potential Join candidates from a relational database, including confidence scores.
- **Clear Join.** Removes the Join from the data flow. You can also right-click the Join object or a synonym joined to the original data source, and click **Delete** to remove the Join.

  > **Note:** Before deleting a recursive Join (when a table is joined to itself) you must remove any fields with active content from the first instance of the table.

- **Insert Union.** Displays potential Union candidates from a relational database, including confidence scores.
- **Delete All.** Removes the Union from the data flow. You can also right-click the Union object or a synonym united with the original data source, and click **Delete** to remove the Union.
- **Canvas options.** Displays the following options:
  - **Flow view.** An icon represents each synonym, and a container that displays the type of join represents each join.
  - **Model view.** A list box represents each synonym, and a vector between the joined synonyms represents each join.
  - **Arrangement.** Select a Layout option to define the spacing between objects on the canvas, or click **Auto Arrange** to reset the display of objects in the canvas to the default arrangement:
    - **Vertically spread out.**
    - **Vertically compressed.**
    - **Vertically compressed with long H-space.**
    - **Default.**
    - **Auto Arrange.**
  - **More options.** Sets the following Join defaults:
    - **Insert child segment with snowflakes.** No is the default, which inserts only the segment selected. You can select **Yes** to insert the

selected segment and all of its descendants.

- **Display full component names.** Yes is the default. Full component names are field names qualified/prefixed with the synonym and segment name.
- **Use Monotree.** Yes is the default. The monotree view displays the current folder in the Data panel and provides navigation to other folders. Select **No** to display all folders in a traditional tree view.
- **Show undo/redo button with history.** No is the default. Select **Yes** to display the history button.

- **Data sheet.** The current state of your data is reflected in the Data sheet, which shows a data sample in a tabular format similar to a spreadsheet. The Data sheet appears when you select a synonym on the canvas.
- **Join Configurator.** When a join has been created, it allows you to modify it by changing the join type, the join operator and expression, and the fields used in the join.
- **Sample data.** When a join has been created and you select the **Sample Data** tab, sample values for the joined synonyms are displayed together in a single table.
- **Join Profiler.** When a join has been created and you select the **Join Profiler** tab, a join analyzer chart displays the number of matching values from each part of the join and the total number of values included in the data source as a result of the join. To the right of this chart, a key field grid shows LHS and RHS match states.

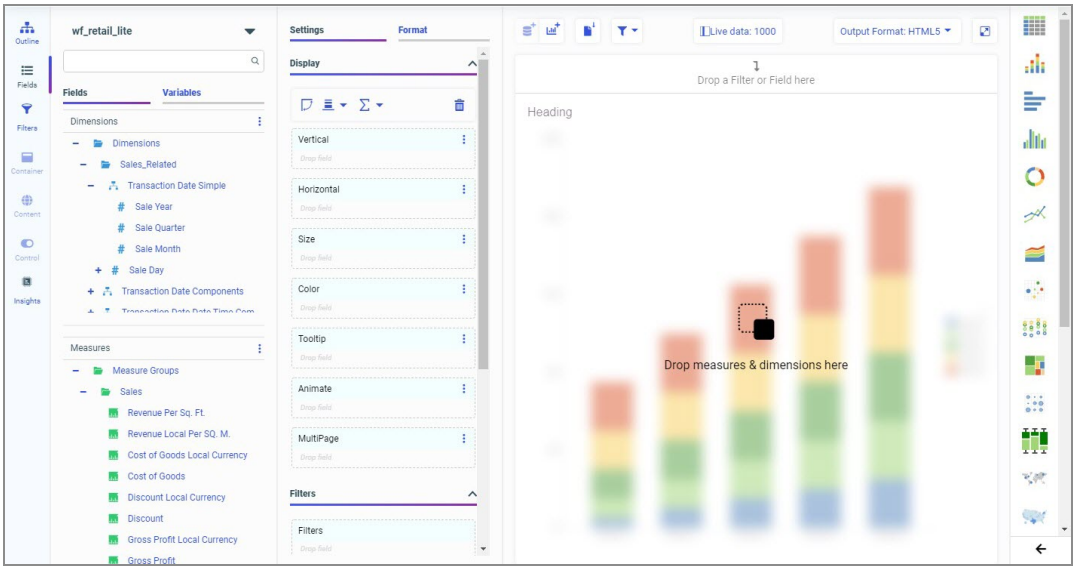
To create joins in WebFOCUS Designer, drag a synonym from the Resources tree onto a synonym in the canvas to which you want to create a join. A join is created automatically based on common field names and values, but you can change the default join using the Join Configurator. For more information, see Joining Data.

Using the Visualization Tab

The data flow defined in the Data tab is used to create content in the Visualization tab. In the Visualization tab, you can create charts and reports and arrange them on a page in different types of containers, or you can create a visualization from charts, reports, images, and more that you have created and saved previously. If you are creating a visualization with existing content, you can access items in your workspace and add them to your visualization.

To create a visualization with new content, on the WebFOCUS Hub, click the plus button and then click **Create Visualizations**. Alternatively, on the WebFOCUS Home page, click **Visualize Data**, or click the plus button and then click **Create New Visualization**. To assemble existing content into a visualization, click the plus button on the Hub or Home Page and then click **Assemble Visualizations**.

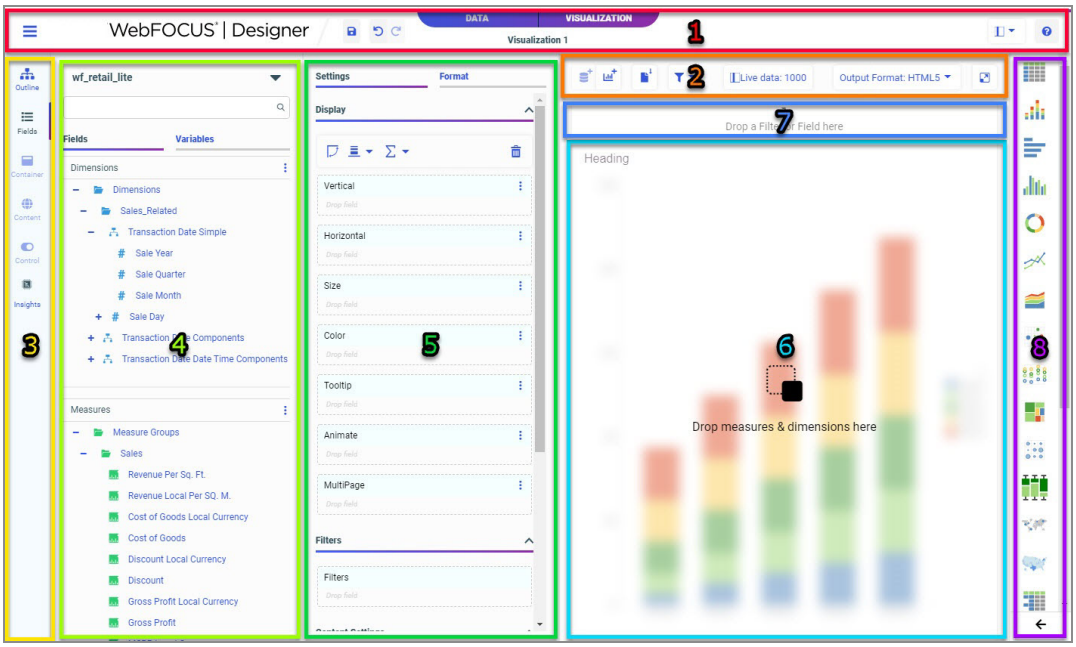
The Visualization tab displays, as shown in the following image.



The Visualization tab includes the following tools and components.

1. WebFOCUS Designer toolbar
2. Visualization toolbar
3. Sidebar
4. Resources panel
5. Properties panel
6. Canvas
7. Filter toolbar
8. Content picker

The position of each item is indicated by the associated number in the following image.



Using the ibi WebFOCUS Designer Toolbar

The WebFOCUS Designer toolbar includes a set of options and controls that affect the entire interface or the entire visualization. The toolbar is shown in the following image.

The following table lists the controls that you can access from the WebFOCUS Designer toolbar.

Icon	Description
☰	**WebFOCUS DESIGNER Menu.** Opens a menu that includes the following options: • **New.** Creates a visualization in whichever mode that you are using, allowing you to create content or to assemble a visualization from existing content. • **Open.** Opens an existing chart, report, page, or visualization. • Saving Options.

Icon	Description
	◦ **Save.** Saves the current visualization. When the visualization contains a single chart or report, you can choose to save it as a FOCEXEC procedure (a single chart or report file) or as a page (file that supports multiple charts and reports in a user-defined layout). If the visualization contains multiple charts or reports, the visualization is always saved as a page. ◦ **Save As.** Saves the current visualization as a new file. • Export As. ◦ **Data.** For single items only, download a data extract, with the fields used in your content, as an .xlsx Excel spreadsheet. ◦ **Image.** For single items only, download a .png image of your chart or report in its current state. • **Close.** Closes WebFOCUS Designer.
	Save. Opens the Save dialog, where you can save the visualization to a specific location in your environment. When the visualization contains a single chart or report, it saves as a single chart or report file. When the visualization contains multiple items, whether it was previously saved as a single item or you are saving it for the first time, it is saved as a compound document with multiple content items within it.
	Undo. Undoes the previous action.
	Redo. Redoes the last undone action. Available when you have undone an action.
	Data and Visualization tabs. Allows you to toggle between the Data tab, where you can add joins to your data source, and the Visualization tab, where you can create content items or import

Icon	Description
	existing items in a responsive page.
	Hide/show panes. Allows you to hide or show the Resources panel, Properties panel with Settings and Format tabs, and Content picker.
	Help. Open the online Help content.

Using the Visualization Toolbar

The Visualization toolbar includes contains options that are specific to the WebFOCUS Designer Visualization tool. The Visualization toolbar is only accessible from the Visualization tab. The visualization toolbar is shown in the following image.

The following table lists the controls that you can access from the Visualization toolbar.

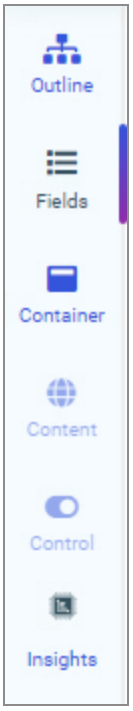
Icon	Description
	Add container. Adds a new panel container to a page. If the visualization is being created with new content, you can build a new chart or report in the container. If the visualization is being assembled from existing content, you can drag a content item into the new container. This button replaces the Convert to page button once the visualization is converted to a page.
	Convert to page. When creating a single content item, converts the visualization from a single item to a page.
	Filter options. When creating a visualization with new content, allows you to enable or disable on-chart filtering and determine filter chaining behavior.

Icon	Description
	Settings. When creating content, opens the Canvas Data Limit dialog, where you can change the following settings: • **Preview data.** Allows you to choose to show a representative data sample, live data in order from the data source, or generic test data values in the canvas at design time when creating content. • **Record limit.** When sample data or live data are selected, allows you to specify the number of records from the data source to display in the canvas at design time when creating a chart. • **Enforce limit.** When using live data, determines whether the record limit should be applied post-retrieval, to aggregated records, or at the source, to records in the data source. These settings affect all new content items on the page. For more information, see Configuring Sample Data Settings.
	Output Format. Allows you to select an output format for stand-alone charts and reports. The following options are available: • AHTML • HTML5 • HTML • PDF • PPTX • XLSX Pages created from new content always use the Interactive output format. For more information, see Changing Output Formats in a Chart or Report.
	Info. When creating a visualization using external, existing content, enables an informational mode that changes the view of all content items on the canvas to display their paths in the repository and parameters configured within these items. This is useful to identify which filters affect which items.

Icon	Description
	Run in new window. Runs a preview of the page in a new browser tab, allowing you to keep a run-time view of your content available as you develop it. When you click **Run in new window** again, the content is reloaded in the same new tab.

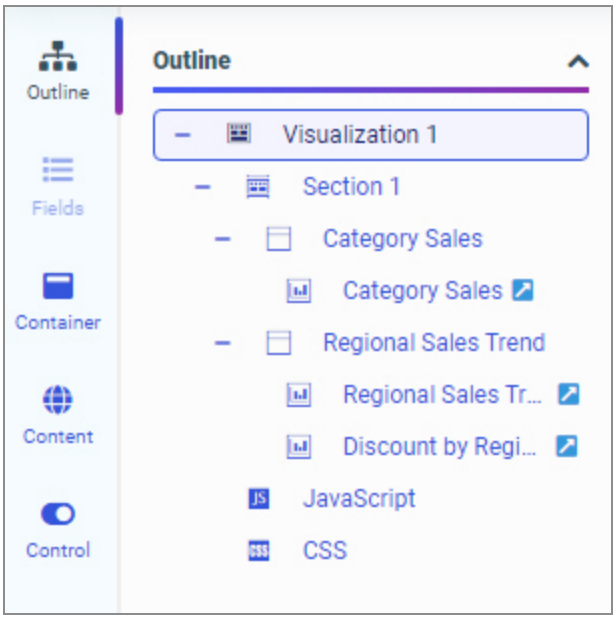
Accessing Resources From the ibi WebFOCUS Designer Sidebar

The sidebar contains tabs that allow you to access, modify, and view properties for different elements and items in a visualization. Each tab in the sidebar displays a related set of resources and options in the Resources panel. The tab selected in the sidebar is indicated by a line next to it, as shown in the following image, where the Fields tab is selected.



Viewing the Structure of a Visualization

The Outline tab provides a high-level overview of all of the items in a visualization, including all pages, page sections, visualization containers, and content items. The Resources panel when the Outline tab is selected is shown in the following image.



When you first open WebFOCUS Designer, the visualization consists of a single chart or report. Only this item appears in the outline. You can right-click the item to view its WebFOCUS language source syntax.

Once additional visualizations are added, page, section, visualization, and content levels appear in the outline, as the visualization transforms from a single content item to a page.

The item that you select for editing in the canvas is highlighted in the outline. You can also click an item in the outline to select it, as an alternative to selecting it from the canvas.

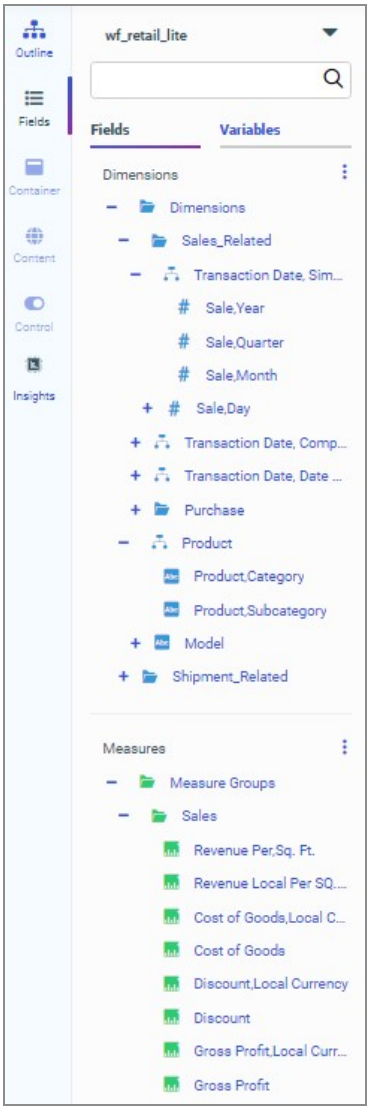
You can right-click an item in the outline to access a relevant set of options. For example, if you right-click a section, you can rename it or add a new visualization to it if you are creating content. You can right-click a container to rename or delete it. Right-click a content item to rename it, duplicate it, or to remove it if it is in a multi-content container. If the item was created in the visualization, you can view the WebFOCUS source syntax or save the item as a separate file.

When the visualization has been transformed into a page, the outline also includes the JavaScript and CSS options, which allow you to add custom code to style and add run-time

behavior to your visualization. This code can reference classes that you specify for visualization components using the Classes property.

Accessing Fields and Variables

You can click the Fields tab to display fields from the data source in the Resources panel. The Resources panel when the Fields tab is selected is shown in the following image.



You can use these fields to create content by double-clicking them, dragging them into a bucket on the Properties panel, or dragging them directly onto your content on the canvas. The bucket to which the field is added determines how the values are displayed in your content.

If you drag a field onto an empty area of the canvas, a new container is created. If you drag a field onto the title bar of a container, you are presented with the option to replace the content in the container or add the content to the container as a new tab, accordion panel, or carousel slide. If you drag a field onto a chart, report, or map, then it is added to that content item in the default bucket for the field type.

Right-clicking a field provides further options, depending on the type of field. These options include the ability to add the field to the chart or the filter toolbar, use a dimension field as a measure or a measure field as a dimension, create bins for measure fields, or create a define field using the selected field. You can also create a definement using the menu to the right of the Dimensions and Measures sections.

You can control how fields and variables are presented by using the View Selector menu, which is shown in the following image.

The following options are available:

- **Field layout.** Choose how the fields in your data source are organized. Folder view is the default.
    - **Folder view.** Organizes fields into folders based on segments and field hierarchies defined in the data source.
    - **Flat view.** Lists all fields in alphabetical order on the same level instead of grouping them into folders.

- **Split dimensions/measures.** By default, dimension fields and measure fields in the data source are separated into different sections of the Fields tab, highlighting the different roles they perform in sorting and aggregating the values in your content. You can deselect this setting to show all fields in a single pane. This option is unavailable when viewing the Variables tab.
- **Field identifier.** You can choose how fields are identified in the Fields tab. By default, field titles display. You can choose to show the field name or field path and name instead.
    - **Show title.** Displays field titles in the Fields tab. The field title is a logical name defined in the data source that is used in axis labels, column headers, tooltips, and other areas.
    - **Show name.** Displays field names. The field name is the literal name of the field listed in the data source.
    - **Show path and name.** Displays qualified field names. This option shows the field name, as well as the file and segment where the field is located.
- **Enforce paths.** Selecting **Enforce paths** means that any joins in your data are automatically checked to ensure that all fields are connected. If a field is used from a table that is not joined to another table whose fields are being used, Enforce paths does not allow that field or any other fields from the disconnected table to be used, ensuring that the request runs successfully. This option is deselected, by default.

You can search for a field or a variable using the search bar. Type a text string into the search bar text box to filter for fields or variables whose titles or names contain that string. The list of fields or variables refreshes dynamically to display values that contain the string. The string can appear at any point in the field name or title.

To clear the search query, delete your search query or click the X button in the search bar, as shown in the following image.

The search bar X button is browser-dependent, so it may not appear in certain web browsers. For example, it is available in Google Chrome, but not in Mozilla Firefox.

The fields in your data source are available from the Fields tab. By default, if the data source uses folders to organize the fields that it contains, these folders are reflected in the Fields tab. This folder organization is called a business view. For dimension fields, these folders could be field hierarchies defined in the data source or segments in the data based

on different tables that have been joined. Measures can also be grouped based on segments.

Icons identify whether a folder is a basic folder or a hierarchy, and whether a field is a character, geography, date, or numeric field. Calculated fields are indicated by a function symbol added to the field icon.

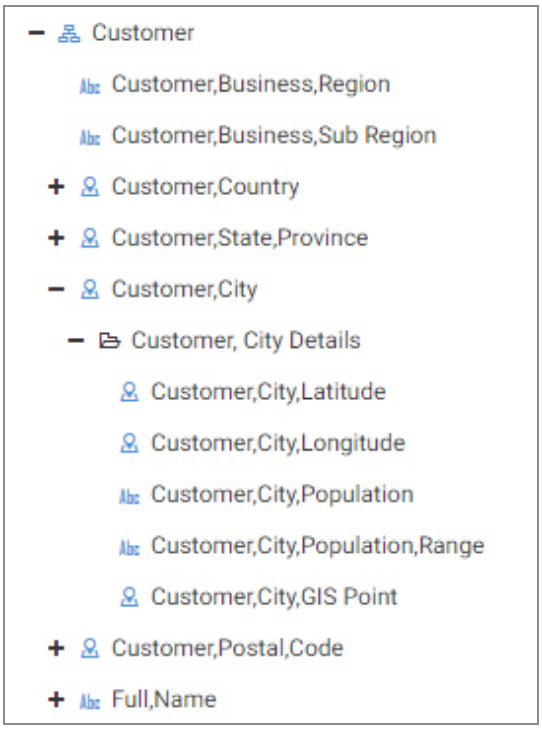
By default, the Fields tab is divided into two sections, one for dimension fields and one for measure fields.

Dimension fields are categories that sort and organize the values in your data. For example, product categories, customer names, geographic locations, and dates are all commonly used as dimensions. In a chart, each value in a dimension field often defines a separate section of the chart. For example, each dimension value might be represented by a riser in a bar chart, a slice in a pie chart, or a point in a scatter plot.

Dimension fields in your data source can be organized into hierarchies, where the top field is the most general and the bottom field is the most specific. The following image shows a hierarchy of product fields.

Note: Hierarchies in cube data sources do not include a values list in WebFOCUS Designer.

Some dimension fields can also be expanded to show attributes. Attributes are other fields that provide additional information about field values. Each attribute field value is correlated to a value of the field that it describes. For example, in the following image, the attribute fields for the Customer City field, listed in the Customer, City Details folder, provide information such as the latitude, longitude, and population of each city value.



Measure fields supply quantitative values for each category defined in a chart or report, often providing aggregated values in a report or sizing components, applying a color scale, or appearing in tooltips in a chart or map. Measure fields typically use a numeric field format. You can add up to 16 measure fields to a chart or report.

To add a field to your content, double-click the field or drag it from the Resources panel on the Fields tab into a bucket or onto the canvas. When creating a chart, different buckets are configured to use different kinds of fields. For example, in a vertical bar chart, a measure field added to the vertical bucket is used as a measure to aggregate the sort values in the chart by determining the height of each bar. On the other hand, putting a dimension field in the vertical bucket creates matrix rows for each dimension value, breaking the chart into multiple smaller charts. Therefore, you typically use at least one measure field in this bucket to define different bar heights. Similarly, you typically use a dimension field in the horizontal bucket for a bar chart to determine the values that each bar represents. If you use a measure field in the Horizontal bucket using the Add as dimension option, a bar is generated for each value in the measure field.

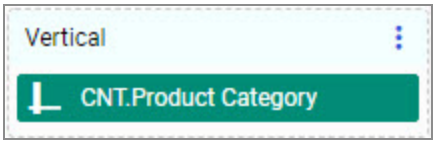
Some chart buckets accept both measures and dimensions but display them differently. For example, the Color bucket in a bar chart creates a color scale for measure fields, and assigns colors to values in a legend for dimension fields.

In a chart, if a bucket is designed to use only measure fields or only dimension fields, you cannot drag an incompatible field into it from the Fields tab. To indicate this, the cursor changes to a cancel sign when pointing to an invalid bucket. For example, when

creating a vertical bar chart, you cannot drop a measure field into the horizontal bucket, or a dimension field into the size bucket.

Instead, to add a measure field to a dimension bucket, right-click the field in the Fields tab and click **Add as dimension**. The field is added to the default dimension bucket, and appears in blue, indicating that it is a dimension, as shown in the following image.

Similarly, to use a dimension field as a measure, right-click it, and click **Add as measure**. The field is converted to a measure by applying the CNT. aggregation function, which provides a count of data records, and added to the default measure bucket. The field appears in green, indicating that it is a measure, as shown in the following image.



You can then move the field into another bucket that accepts measure fields.

You can also right-click the aggregated dimension field in a measure bucket and point to **Aggregate** to change the prefix operator aggregation from count (CNT.) to count distinct (CNT.DST.), which provides the number of distinct values for the field, or percent of count (PCT.CNT.), which computes percentages based on the number of instances found.

The Tooltip bucket, meanwhile, behaves somewhat differently. The Tooltip is a measure bucket that displays field values in the tooltip when you point to an area of a chart. Unlike other measure buckets, you can drag a dimension field directly into the Tooltip bucket. The dimension is aggregated using the FST. prefix operator, so the first value of the field is displayed in the tooltip. This ensures that the dimension field generates only one value for the tooltip. The Tooltip bucket is best used when each area of the chart is associated with a single value of the selected tooltip fields. As with any bucket, you can right-click a field in the Tooltip bucket and point to **Aggregate** to change the aggregation.

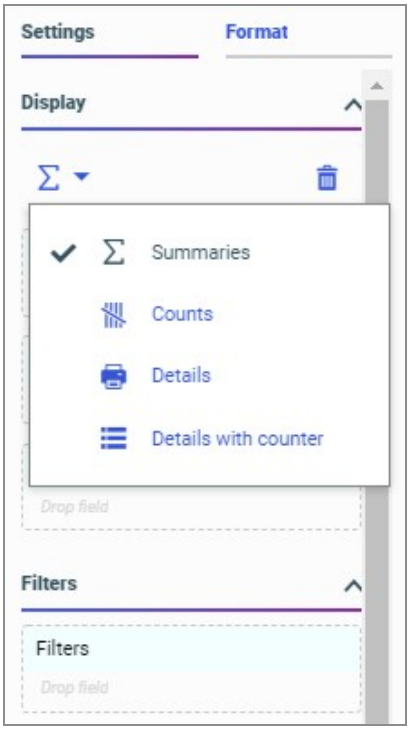
Since reports simply display field values based on the rules for each bucket, with no dependencies based on field type, they do not have these limitations. All distinct values are shown for any field dropped into the Rows or Column Groups buckets, while values are aggregated for any field added to the Summaries bucket.

The Rows bucket creates a row for each unique value in each field within it, while the Column Groups bucket creates a set of measure columns for each unique value. These

buckets sort the aggregated or detailed values in the report. You can add multiple fields to the Rows and Column Groups buckets to display more granular information in a report.

The Summaries bucket aggregates measure field values for each sort value of the Rows and Column Groups fields in the report. Adding multiple fields to the Summaries bucket creates multiple measure columns in the report. These measure columns are repeated for each column group value, if there are any fields in the Column Groups bucket.

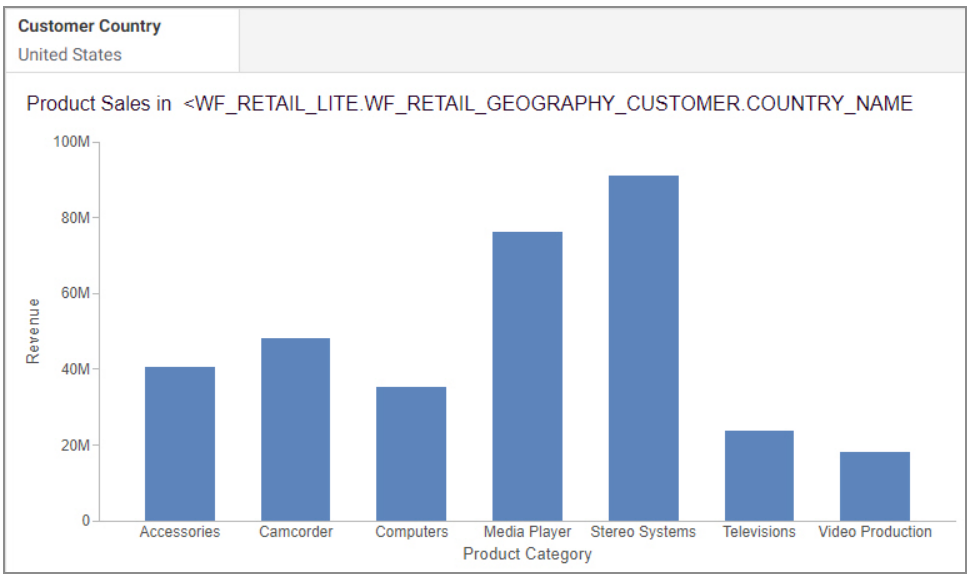
While the Summaries bucket is the default measure bucket, it is not the only option for displaying measure values. You can use the display options to change the Summaries bucket to the Counts, Details, or Details with a counter bucket to display different information for the fields within it. The display options can be accessed from the buckets from the Calculation Options menu, as shown in the following image.



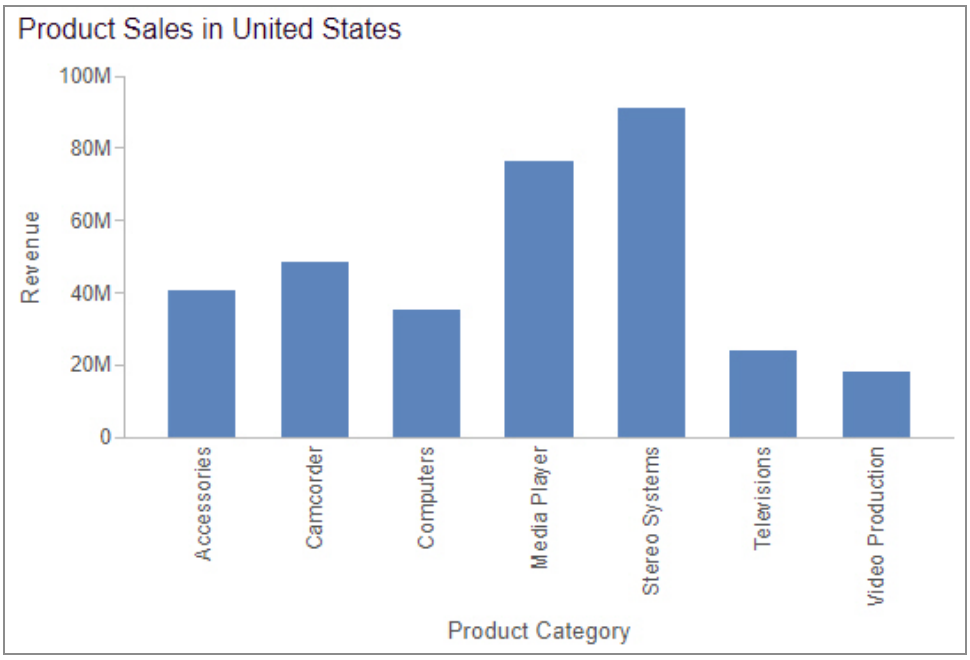
The Counts bucket, enabled by selecting the **Counts** display option , aggregates values in the report by displaying the number of records for each field within it, for each sort value. The Details bucket, enabled by selecting the **Details** display option , does not aggregate the values of the fields within it. Instead, it displays all values for the selected fields. The Details with counter bucket, enabled by selecting the **Details with counter** display option , displays all values for the selected fields, similar to the Details bucket, and also counts the rows for each primary sort field value.

You can add fields to other areas, as well. If you drag a field to the Filter toolbar, you can create a filter for the field. If the field is a character field, you can select values from a list. If the field is a numeric field, you can use a slider to specify filter values. If the field is a date field, you can use a calendar to select dates or use a predefined date range.

If you drag a field into a header or footer, the field is used as a parameter to dynamically provide a value in the header or footer text. The first value found for the field is displayed at run time. Using a field in the header or footer is especially useful if that field is also used to filter your content or if it is used as a multipage field in a chart or to create breaks in a report. The following image shows WebFOCUS Designer with the Customer Country field added to the header of a chart that is filtered to only show data for the United States.



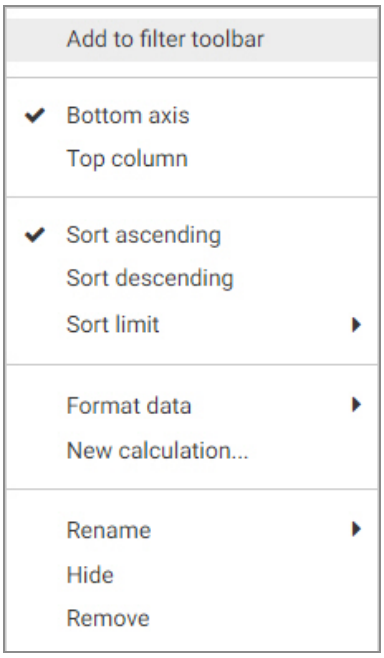
The following image shows the chart at run time. The chart header displays **United States**, which is the value of the Customer Country parameter.



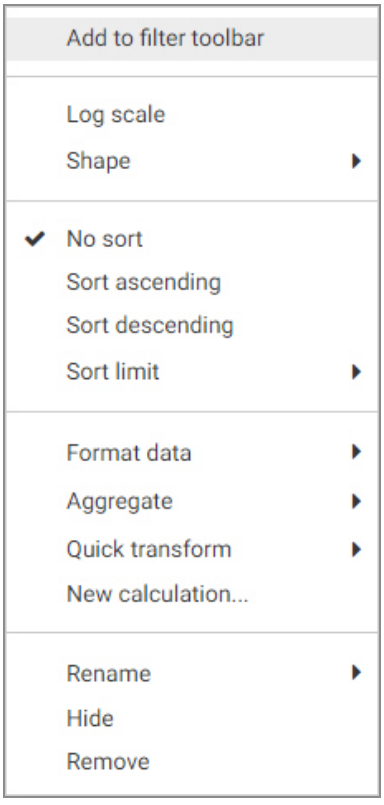
You can manipulate fields from the Fields tab as well. You can right-click a field to add it to your content, create a filter for it, or create a calculated DEFINE field using the field that you selected. If you right-click a dimension field, you can add it to the chart as a measure. When you do this, an aggregation function that calculates a *count* of the dimension values is applied to the dimension, and the field is placed in the bucket.

Similarly, you can right-click a measure field and add it as a dimension. In this case, the measure value in each row of the data source is used as a sort value in the chart. You can right-click a dimension and click **Group values** to create groups, or right-click a measure and point to **Bin values** to create bins. Groups are groups of related values, and bins are ranges of values. You can use groups and bins to create sort fields for your content. For example, bins are used in histograms to plot the distribution of data values. Each bin value generates in a bar in the histogram.

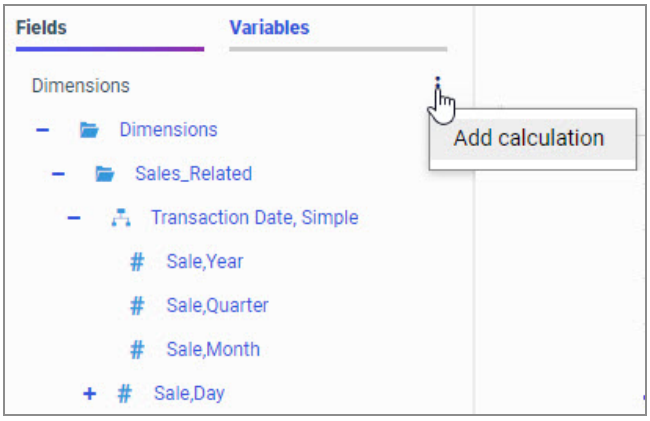
You can right-click a measure or dimension once they are added to your content to access additional options. For example, if you right-click a dimension added to a chart, you can change the location of the axis, the sort order, create a compute, and more, as shown in the following image.



If you right-click a measure added to a chart, you can set it to use a logarithmic scale, which is useful when there are large disparities between values on the same axis, set sorting, apply an aggregation function, use a quick transform, and more, as shown in the following image.



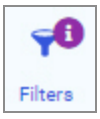
In the Fields tab of the Data pane, you can also create a calculation that runs before aggregation (DEFINE) or after aggregation (COMPUTE) by clicking the ellipsis buttons on the top right of the Dimensions and Measures panes, and clicking **Add calculation**, as shown in the following image.



The Variables tab contains a list of variables and preset filters defined in your data source, as well as default system variables. To add a variable to the chart to use as a filter, drag it into the Filter toolbar.

Adding Filters to Pages Assembled From External Content

When you assemble a page from existing content, using the Assembled Visualizations option, the Filters tab on the sidebar allows you to display and chain filter controls. When you add an existing chart or report to a page, the WebFOCUS Designer identifies any parameters present in the item. A badge appears on the Filters tab on the sidebar, indicating that you can add filters to the page, as shown in the following image.



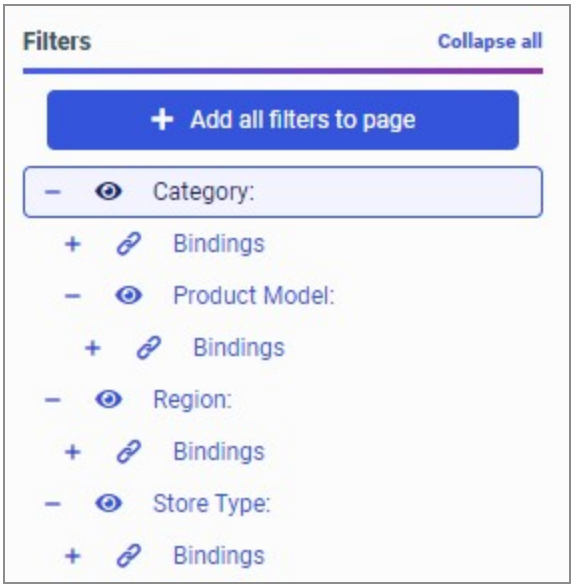
When you open the Filters tab, the **Add all filters to page** button and a list of parameters from the content items on the page display. Click **Add all filters to page** to create filter controls for all of the listed parameters, or right-click each one and click **Add to page** to add them individually. Once added, the visibility icon next to the parameter is no longer faded.

Below each parameter on the Filters tab is an expandable list of Bindings. The Bindings list shows the data source and target items on the page that are associated with each parameter, providing information about each filter. Click a target item in a Bindings list to briefly highlight the border of that item on the page to easily locate it.

Note: Numeric, date, and date-time filter bindings do not indicate the associated data source, but you can click the Info button on the Visualization toolbar to see which data sources are used for the associated target items to determine the data source for each filter parameter.

Filters for fields that are part of the same hierarchy in the data source are automatically chained. This means that when you select a value from one of the filter controls, the other controls are filtered and updated based on the value that you select, ensuring that you can only select valid filter values. You can also manually apply chaining by dragging one parameter onto another in the parameter list. The filter becomes a child, for chaining purposes, of the field onto which it was placed. To unchain a parameter, drag it into the empty space between the Add all filters to page button and the top parameter in the list. The parameter is removed from the chaining hierarchy and moved to the bottom of the list.

Chaining relationships are indicated by indents in the parameter list. Filter controls are chained to any filters indented under it in the list. For example, in the following image, the Category filter is chained to the Product Model filter, so when you select a category, the list of available models in the filter control updates.



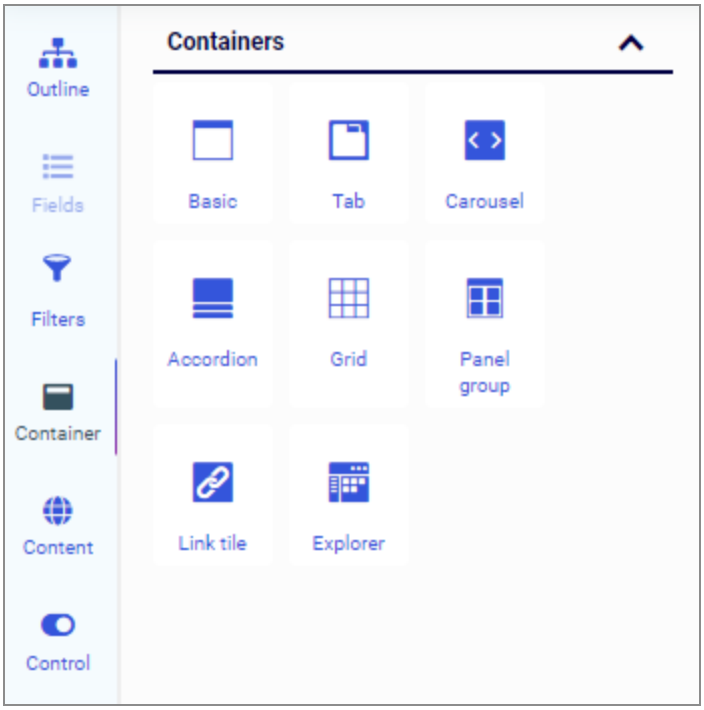
In this example, selections from the Category filter do not affect the Region or Store Type filters, since they are not part of the same chaining hierarchy, and, since filtering in an assembled page is unidirectional, values selected from the Product Model filter do not chain back up to the Category filter.

Note: Chaining with dynamic values from an XML report requires applying the same filters to ensure the child filter values update; otherwise, all field values are retrieved.
For example, to chain a filter for State to one for Country, the State field in the XML report that provides the filter values should be filtered for the same Country parameter used in the page, so that the list of State values is updated when the Country filter is applied. For more information, see Chaining Filter Control Selections

Accessing Containers and Widgets

The Container tab provides a selection of container types and widgets that you can use in your visualization.

The Container tab is shown in the following image.



Using this tab, you can select empty containers and widgets that you can drag to the canvas and populate with the content of your choice.

The types of containers available to you include the following:

- Basic
- Tabbed
- Carousel
- Accordion
- Grid
- Panel group

The panel, tabbed, carousel, and accordion container types are used to hold content, such as charts, reports, or images. You can add multiple content items to a tabbed, carousel, or accordion container and navigate between them using the paging behavior of the container.

When assembling a visualization from existing content, you can add multiple filter controls to cells in a grid container as an alternative to or in addition to the Filter toolbar, providing more freedom in the placement of your filter controls. The panel group container, meanwhile, can contain multiple other containers within it, allowing you to keep them together when responsive folding occurs in the visualization.

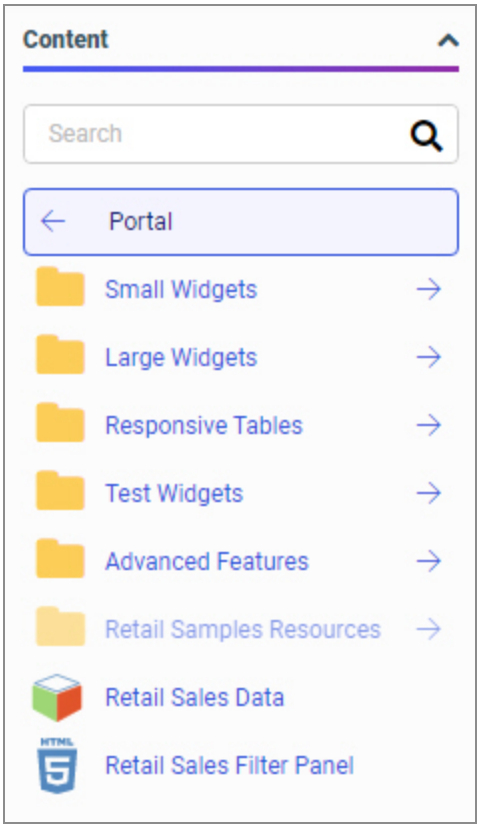
Note: In the Chrome browser, only one container is selected at first when multiple containers are added to a panel group. In the Firefox browser, all of the containers are selected in the panel group.

The Container tab also allows you to access the Link Tile and Explorer widgets. The Link Tile widget allows you to click through from a content item displayed on the page to a target item from your Repository. You can configure the Link Tile using the Link Tile options on the Settings tab of the Properties panel. The Explorer widget allows you to embed the Workspaces view of the Hub into a WebFOCUS Designer page that can be added to a portal, allowing users to create content and access existing files in the Repository.

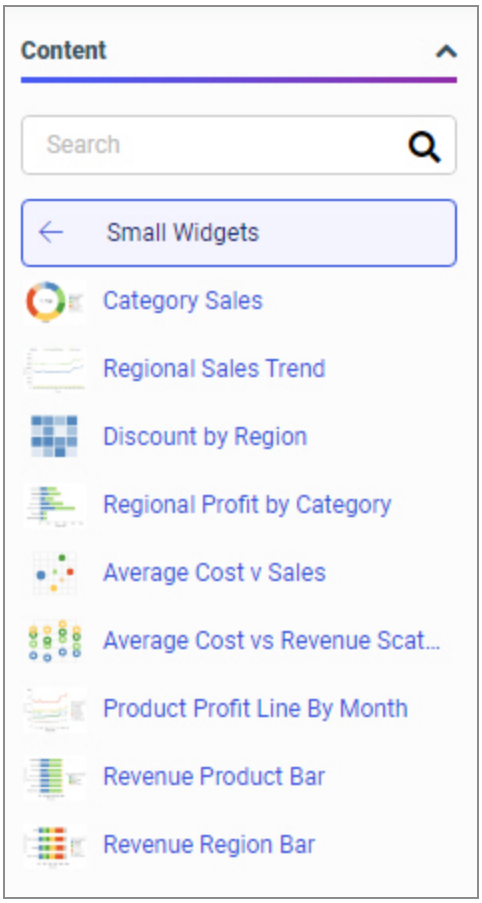
Adding Existing Content to a Visualization

You can add existing content to a visualization from the Content tab. This content can be a WebFOCUS procedure such as a chart or report, a URL, an image, and more.

The Content area provides access to the Resources tree, where you can navigate to your content. The initial view of the Resources tree displays the directory in which the page is created. You can navigate to other workspaces and folders using the back arrow. Each item on the tree is represented by a thumbnail, making it easy to locate content. The following images show the Resources tree displaying two different levels of the repository hierarchy. The first image shows folders and items within the Portal folder.



The second image shows the content in the Small Widgets folder, within the Portal folder. You can click the name of the folder, in this case, **Small Widgets**, to return to the parent folder.



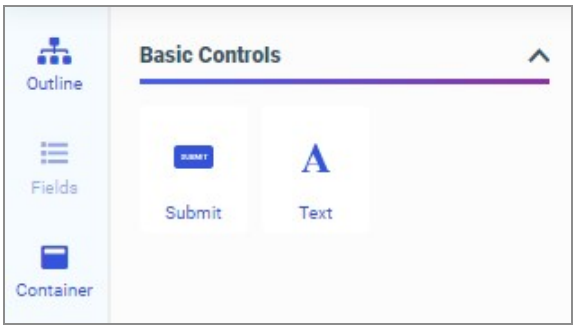
You can use the search bar to find an item more easily. Once you have typed a search term, to return to the view of all items, delete the text in the search bar, or, in certain browsers, click the X button.

Drag a content item onto the visualization canvas or into a container to add it. If you drag content onto a container that already contains content, you are asked whether you want to replace the content in the container or add a new tab, accordion panel, or carousel slide to it.

Adding Text and Buttons to a Control Area

When assembling existing content into a visualization, you can use the Control tab to adda text labelor Submit and Reset buttons to a cell in a filter control area, such as the Filter toolbar or a grid container.

The Control tab is shown in the following image.



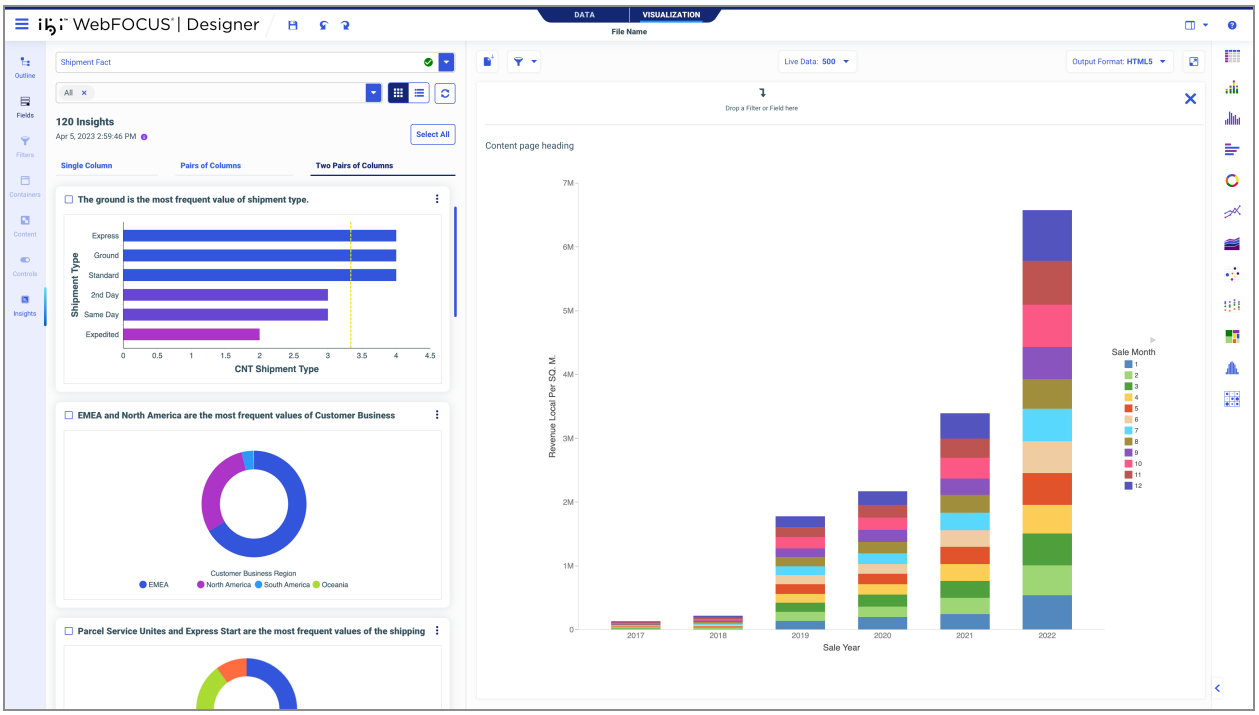
You can use a text label to add contextual information to a filter cell. The Submit and Reset buttons, meanwhile, change the filter behavior so that instead of refreshing the page to apply filtering whenever a user makes a control selection, the page does not refresh until the user clicks **Submit**. This is useful when you have many filter controls on a page. The Reset button allows the user to reset all filter controls to their default selections. The options on the Control tab cannot be used when creating content in a visualization.

Once added, you can choose to delete either the Submit button or the Reset button to include the functionality of just one of these buttons.

To add a text label or Submit and Reset buttons to a visualization, drag the object into a cell in the Filter toolbar, a modal filter window, or a grid container.

Generating Analytic Insights

You can click the **Insights** tab on the sidebar to easily run advanced analyses and generate visualizations and narratives on your data set, without manually preparing and analyzing your data, or having prior knowledge of data science or statistics. An example of the Insights tab with some generated content is shown in the following image.



Insight tab includes the following components:

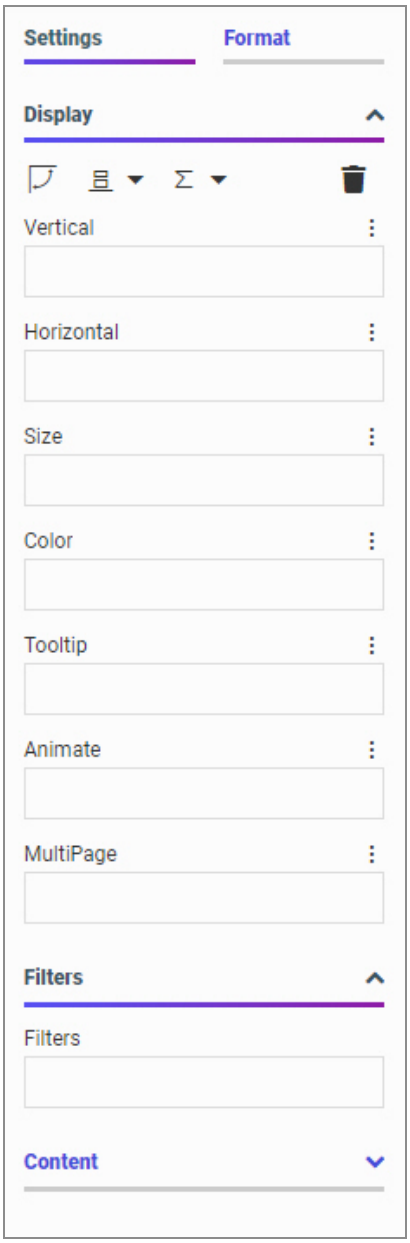
- **Facts Dropdown**: Users can switch between fact tables within a data source to generate or view insights.
- **Filter Dropdown**: Users can filter insights based on column/field names in the selected data source. **All** is set by default. The options are changed based on the selected facts.
- **Re-Analyse Button**: Allows users to redo the insights generation process for the current data source.
- **Timestamp Display**: Shows the last date and time when insights were generated for the selected data source.
- **View Switcher**: Enables users to toggle between tile view and list view for insights visualization.
- **Save Visualization**: Allows users to save selected insights as visualizations for future reference.

To learn more about Automated Insights, see Generating Instant Insights in WebFOCUS Designer.

Modifying Object Properties

You can view and modify the properties of an item on the page, including content, containers, filter controls, and pages, from the Properties panel. The Properties panel includes configuration options on the Settings tab and styling and formatting options on the Format tab. The Properties panel appears to the right of the Resources panel, and changes based on the item that you have selected in the canvas.

The Properties panel for a bar chart is shown in the following image.



When you select a chart or report, the Properties panel shows a list of buckets on the Settings tab. Drag a field from the Resources panel with the Fields tab selected into a bucket to add it to your content. The buckets that you place your fields into determine how they are displayed.

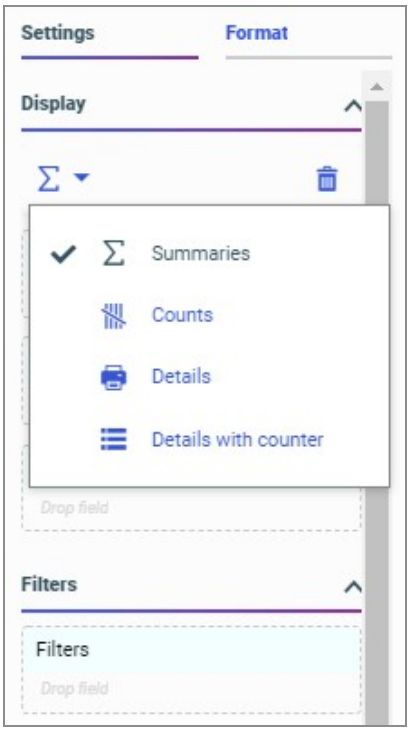
When creating a chart, depending on the type of chart that you create, you may see some of the following buckets:

- Vertical
- Horizontal
- Size
- Color
- Tooltip
- Animate
- MultiPage
- Measure
- Detail
- Location
- Group

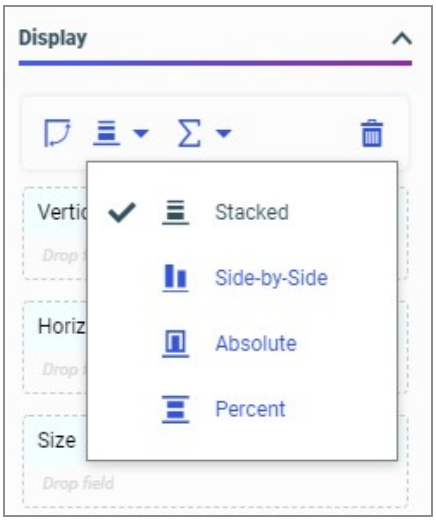
When creating a report, you can use the Rows and Column Groups buckets to sort a report based on the values of the fields in those buckets. The Summaries bucket aggregates measure field values based on these sort values.

The Settings tab also includes the filter bucket. The Filter bucket allows you to create static filters specific to a content item, as opposed to the Filter toolbar, which creates prompted filters that affect the entire visualization. To create a static filter, drag a field from the Resources panel into the Filter bucket. You can specify filter values using the Added Filter dialog with a set of controls appropriate to the type of field that you are filtering.

You can use the display options, available from the menus above the buckets on the Settings tab, to change the display of values in your content. When creating a report, the display options allow you to change the Summaries bucket to the Counts, Details, or Details with a counter bucket to display different information for the fields within it, as shown in the following image.



When creating a chart, the display options additionally allow you to modify its structure, depending on the chart type. The layout display options for a bar chart are shown in the following image.

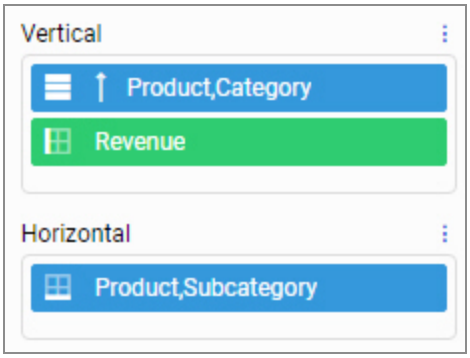


In addition to changing the display of measure values and the layout of the chart, you can swap the axes in eligible charts and clear the fields from all buckets.

The menu to the right of each bucket label also provides different options for charts and reports, depending on the bucket. These options include the ability to clear the bucket,

create a calculation in a report, or split the y-axis for multiple measures in a bar, line, or area chart.

When placed in certain sort buckets, fields display icons indicating the sort order of the field and provide an option to use the field as a matrix row or column if it is used as a dimension, or switch y axes to create a dual-axis chart, if the field is used as a measure in certain chart types. In the following image, the vertical bucket contains a matrix row field and a vertical axis measure field.



You can also right-click a field in a bucket to access options pertaining to that field. These options include field format, sorting, aggregation options, and more.

Below the field container buckets in the Display area, you can access the Filters and Content areas. The Filters area includes the Filters bucket. You can drag a field into the Filters bucket to create a static filter. Static filters affect only the selected content item, and cannot be modified at run time.

The Content area includes a variety of options to modify the structure and behavior of the chart. You can show or hide the header and footer areas for charts and reports, add row and column totals to reports, and enable Auto Drill and Auto Linking for single content items. For single-content charts only, you can also enable automatic refresh and enable Insight. Auto Drill, Auto Linking, and Insight provide run-time interactivity to your content, expanding the amount of information accessible from a single item. Automatic refresh allows you to reflect changes to your data source in real time by updating your content at set intervals.

When editing content, the Format tab provides access to options to style your content and change the output format. For a report, you can change the theme and, for a stand-alone report, the output format. The theme applies an overall set of styling properties to the entire report, while the output format allows you to change the type of file generated at run time.

When editing a chart, the Format tab provides access to even more options. You can use the Quick Access menu at the top of the Format tab to access styling options for different

sections of a chart, such as the legend, axes, or different series. You can also access options for different sections of a chart by right-clicking an area of the chart on the canvas and clicking **Style**. The General options include the ability to change the theme and output format, as well as styling the chart frame and background color.

When you select a container in a visualization that has been transformed into a page, the available options on the Properties panel allow you to style the container and configure its behavior within the visualization as a whole. On the Settings tab, you can change display settings such as whether to include a title or toolbar on the container and on which types of devices the container should be visible. You can also allow content customization and provide cascading style sheet class names that you can use in custom CSS and JavaScript code. The Format tab allows you to change the style of the container. The Style options are based on the selected theme, which you can change using the Theme option on the Format tab when you select an entire page. The selected theme is also applied to content in the visualization, by default, although you can specify a different theme for each chart or report.

When you select a section of a page, which is a horizontal area of the visualization that contains one or more rows of containers, you can use the Settings tab to assign CSS classes, make the section collapsible, and set the height of the section. On the Format tab, you can select a style to change the background color of the section. You can add more sections to the visualization by right-clicking the first section, in the space directly surrounding the containers in the visualization, and clicking **Insert section above** or **Insert section below**.

You can select an entire page of a visualization by clicking the page toolbar or the area of the canvas below all of the sections on a page, or by using the outline. When you select the page, you can use the Settings tab to assign CSS classes and show or hide the title and toolbar for the page. On the Format tab, you can change the theme for the entire page, the page margins and maximum width of the page, and the appearance of the page heading text.

Using the ibi WebFOCUS Designer Canvas

The canvas displays the current state of your content as you create it. You can select items in the canvas to edit them, drag resources such as fields or containers onto the canvas to add them to your content or page, and use on-chart filtering to create filters based on visual selections.

The canvas also contains, if enabled from the Properties panel, heading text for each component, as well as optional footers for charts and reports. You can double-click this text to edit it, and then type new text, make styling changes to header and footer text using the text toolbar that appears, and even drag a field into the header to create dynamic header text that displays the first available value for the field at run time.

Initially, if you choose to create a visualization with new content, the canvas allows you to create and edit a single chart or report.

The chart or report fills the entire canvas. Some options are only available when creating a single content item. For example, you can only enable Auto Drill or Auto Linking for stand-alone content items and only make a stand-alone item an Auto Linking target.

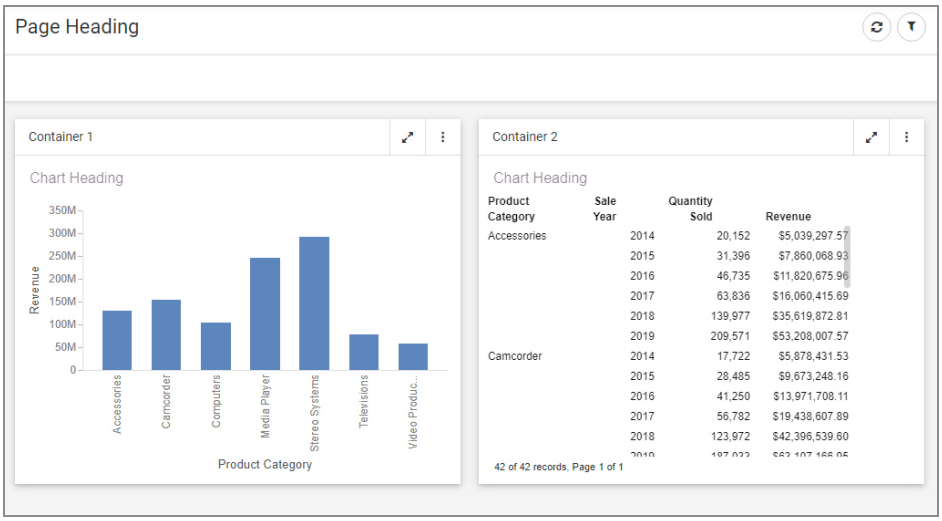
When creating a single content item, two canvas behaviors are available. The output format that you use determines which of these behaviors is used.

At design time, the AHTML and HTML5 output formats use the responsive canvas. Reports present In-Document Analytic paging controls at the bottom of the report that allow you to navigate through it. Some report styling properties are unavailable when using the responsive canvas. Charts in these output formats present informational tooltips and allow on-canvas filtering at design time.

The HTML, PDF, PPTX, and XLSX output formats, on the other hand, use a paginated canvas at design time. Some report styling properties are only available when using the paginated canvas. You can scroll through an entire report using a scrollbar, and charts do not present interactive options, such as tooltips.

At run time, the HTML5 and HTML output formats are functionally equivalent. The two options are available to allow you to use the two different canvas types. For more information about output formats for charts and reports, see Changing Output Formats in a Chart or Report.

You can create multiple new content items on a page. To transform a single item into a page, click **Convert to page**. Once you have converted a chart or report into a page, you can drag a container onto the page from the Resources panel when the **Container** tab is selected on the sidebar. Click the **Add container** button or click and drag a container from the Resources panel, and drop it in the desired location. An empty container is created, to which you can add content. Alternatively, with the Fields tab selected on the sidebar, click and drag a field into an empty area of the page to create a basic panel container with a default content item that uses the selected field. The canvas with two containers is shown in the following image.



Once a container is placed on the page, you can click and drag the container toolbar to move it. A blue highlighted area shows where the container is dropped. If necessary, other containers on the page move to accommodate the placement of the container that you have moved.

If you point to a container, a set of sizing handles appears. If you click and drag one of these handles, you can resize a container on the page. The contents of the container automatically resize to fit the new container dimensions.

The same types of components are available in a page assembled from existing content. These pages are created by clicking the plus button on the WebFOCUS Hub or WebFOCUS Home Page and clicking **Assemble Visualizations**. When assembling content into a visualization, you cannot edit individual, external content items. However, additional options are available for certain components. For example, you can change styling and default values for filter controls, style and rearrange the filter grid, and unlock a container for run-time customization. When assembling a page from existing content, if you hold the Ctrl key, you can select multiple containers, controls, or sections to apply the same changes to each.

You can click and drag to select an area of a new chart created in a visualization to filter it. When you make a selection, a tooltip appears, giving you the option to filter for the values in the selected areas of the chart, or filter the visualization to exclude those values. A filter control is added to the Filter toolbar, and all content created in the visualization is affected, allowing you to filter your content quickly and intuitively. To clear the filter, remove the filter control from the toolbar. The filter is removed from all affected content.

The canvas shows a design view of your content. To see a full run-time view of your visualization, with run-time functionality such as drilldowns, In-Document Analytics, and

more, click **Run in new window** on the Visualization toolbar. Your content runs in a new browser tab or window.

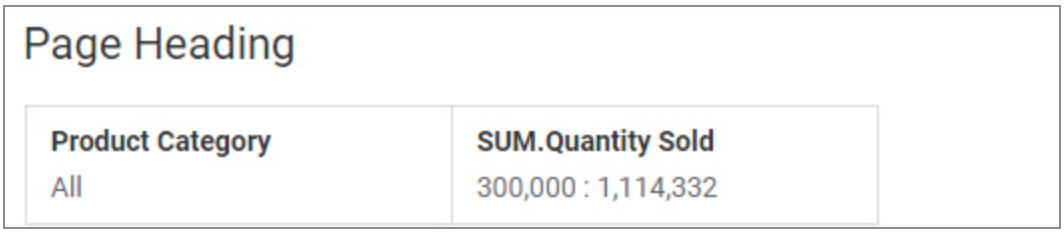
Filtering a Visualization From the Filter Toolbar

Filters in WebFOCUS Designer can utilize one of two behaviors. These are static filters and prompt filters. Static filters are always applied to your content whenever it is run, and allow you to apply consistent filter values without prompting the user to make filter selections. They are applied to a single content item at a time, and can only be added to new content. Prompted filters, on the other hand, allow users to select the filter values to use in your visualization at run time. When you create a prompted filter, a control appears on the Filter toolbar, allowing you to make filter selections. The user can see these controls and make selections from them at run time. Run-time controls are not displayed for static filters. Prompted filters can be created for new content, or added to a visualization from referenced content.

Prompted filters are created, accessed, and modified from the Filter toolbar. You can create a prompted filter in one of the following ways:

- Drag a field from the Resources panel to the Filter toolbar.
- Right-click a field from the Resources panel or a bucket in the Properties panel and click **Add to filter toolbar**.
- Use on-chart filtering to select areas of a chart on the canvas.
- Add external content that includes dynamic parameter filters to a page.

The Filter toolbar is displayed below the page heading in the following image.



When creating a prompted filter in a new chart or report, you can click a control on the Filter toolbar to change the filter selection, or right-click it to access additional filtering options, such as making the filter required, changing the aggregation, changing the number of values that can be selected, or changing the filter operation from value selection to exclusion.

Right-click a prompted filter generated for external content to change the control type or merge controls for the same field. You can also use the options on the Settings and Format tabs to set default values for the filter, specify how the filter interacts with items in a page or portal, and style the filter.

Different types of filters provide different controls on the Filter toolbar. Filters on alphanumeric fields provide a list from which you can select values, measure fields provide a slider on which you can provide maximum and minimum values, and date fields provide a calendar from which you can select a range of dates or use a default range option.

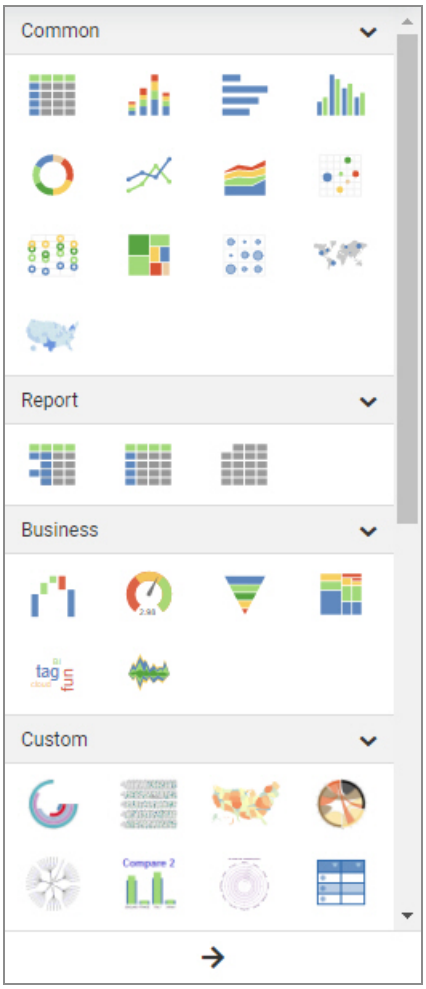
Changing Content Types

You can use the Content picker, on the right-side of the WebFOCUS Designer interface, to change chart and report types in your visualization.

When a chart or report is selected, the Content picker allows you to select a chart type or report layout. This includes the ability to change your content from a chart to a report in addition to changing to different varieties of each content type.

By default, the Content picker is collapsed, allowing you to scroll through common options, as shown in the following image.

You can click the arrow at the bottom of the Content picker to expand it to display all content options, including additional report layouts, different map types, additional chart types, and chart extensions that you have enabled in your environment. The expanded Content picker is shown in the following image.



When you change the chart or report type, fields may need to be rearranged in, and in some cases removed from, their buckets to accommodate the new type. You can rearrange them as needed.

Create a Visualization With New Content in WebFOCUS Designer

WebFOCUS Designer provides a wide variety of content creation options, allowing you to create charts and reports in a page, or create a page with existing content. If you create a visualization with new content, you can also customize the data that you use in your content by joining additional tables to your original data source.

The following are a general set of steps that you can use to create content in WebFOCUS Designer:

Procedure

1. On the WebFOCUS Hub, click the plus button and then click **Create visualizations**.

   Or, on the WebFOCUS Home page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Start by creating a chart or report.

   a. From the Content picker, select a content type. You can choose from different chart types and report layouts.

   b. With the Fields tab selected on the sidebar, drag fields from the Resources panel into the buckets in the Properties panel to create content.

      You can also double-click a field or drag it onto the canvas to add it to the default bucket for that field type.

   c. Optionally, filter your content by dragging a field into the Filter toolbar or Filters bucket.

      Prompted filters in the Filter toolbar affect the entire page, while static filters in the Filters bucket affect only the item for which they were created.

   d. Use the options of the Format tab of the Properties panel to style your content.

   Once you have created content, you can save it as a single item or turn the visualization into a page.

4. To create a page that contains the single item that you have created, click **Convert to page** on the Visualization toolbar. The item is moved into a container.

5. Continue adding content to the page. You can create a container by dragging one from the Container tab on the sidebar, or click **Add container** to create a container. You can then create a content item as outlined in the previous steps. You can also drag a field from the field list onto an empty area of the canvas to create a container with content using that field.

6. Select different areas of the page and style and format them using the options on the Properties panel.

   The entire page, sections, containers, filter controls, and filter cells all have their own

set of styling and formatting options.

7. Once you have finished creating your visualization, save it. You can also preview the visualization to see run-time behavior by clicking **Run in new window**.

Result

You can now add your visualization to a portal and share it with others. If you created a single content item instead of turning the visualization into a page, the item can be added to new visualizations as external content.

Create a Visualization With Existing Content in WebFOCUS Designer

WebFOCUS Designer provides a wide variety of content creation options, allowing you to create charts and reports and create pages with new content, or create pages using existing content. If you have created charts and reports in WebFOCUS Designer, InfoAssist, or other content creation tools, or if you have external items such as images and URLs, you can add them to a page that uses external content.

The following are a general set of steps that you can use to create content with existing items in WebFOCUS Designer:

Procedure

1. On the WebFOCUS Hub or the WebFOCUS Home page, click the plus button and then click **Assemble Visualizations**.

   WebFOCUS Designer opens in a new browser tab.

2. In WebFOCUS Designer, select a template for the page. You can use a predefined template, or select **Blank** to build the page from scratch.

3. Add content to the page. Click **Content** on the sidebar and navigate to an item in the Resources panel, then drag onto the canvas. Alternatively, you can create a container for an item first by clicking **Container** on the sidebar and dragging a container on to the canvas, and then add content to the container.

4. Continue adding content to the page. You can create a container by dragging one from the Container tab on the sidebar, or clicking **Add container**. You can then click **Content** on the sidebar to access items that you can add to containers on the page

or drag directly onto the canvas.

5. If the content that you added to the page includes dynamic parameter filters, an indicator appears on the Filters tab on the sidebar. Select the Filters tab and then click **Add all filters to page** to create controls for all parameters in your content, or right-click a specific parameter in the list and click **Add to page** to create a control for it.
6. Select different areas of the page and style and format them using the options on the Properties panel.

   The entire page, sections, containers, filter controls, and filter cells all have their own set of styling and formatting options.
7. Once you have finished creating your visualization, save it. You can also preview the visualization to see run-time behavior by clicking **Run in new window**.

Result

You can now add your visualization to a portal and share it with others. If you created a single content item instead of turning the visualization into a page, the item can be added to new visualizations as external content.

Navigating ibi WebFOCUS Designer With Keyboard Controls

You can use keyboard commands to navigate through the WebFOCUS Designer interface to perform certain content creation tasks without a mouse.

Press the Tab key to navigate between adjacent sections of the user interface, or press Shift + Ctrl + F10 to open a menu of sections of the user interface to quickly jump from one section to another if they are not near each other. You can jump to one of the following areas of the interface:

- WebFOCUS Designer toolbar.
- Visualization toolbar.
- Sidebar.
- Properties panel.
- Canvas.

- Content picker.

Press the Enter key or Spacebar to select the item or area that is in focus. The arrow keys can be used to navigate through a section of the interface. For example, use the Up Arrow and Down Arrow keys to navigate through the field list, and the Right Arrow and Left Arrow keys to expand and collapse folders.

Context menu options can be accessed by pressing the Menu key or by pressing Shift + F10. For example, to add a field to a chart or report, navigate to the field, press the Menu key, focus on **Add to chart** or **Add to report** and press the Enter key or Spacebar.

When you select a container on the canvas, you can use the arrow keys to move the container and use the Shift key and an arrow key to resize it. Shift+Right Arrow expands the container to the right, while Shift + Left Arrow contracts the container from the right. Similarly, Shift + Down Arrow expands the container downward, while Shift+Up Arrow shrinks the container from the bottom. You can use the Delete key to delete the selected container.

You can also use keyboard commands in a page at run time. Use the Tab key to navigate between areas, buttons, and controls on the page, and press the Enter key or Spacebar to run a button command or open a menu. When using filter controls, you can use the Tab key to navigate to different sections of the control, use the arrow keys to navigate to different values, use the Enter key to select values, and use the Esc key to close the control and apply the filter. At run time you can also press Ctrl + Shift + F10 to open a menu that allows you to jump to different areas and containers on the page, once you have started to navigate within it.

Basic Guidelines for Building Accessible Pages in WebFOCUS Designer

When building pages in WebFOCUS Designer that are intended to be accessible, there are some basic guidelines that you can follow.

Before creating your pages, you need content with which to populate them. When creating authored pages that are converted from a single content item, you build this content directly within the page. When assembling pages from existing content, your content is saved as stand-alone charts and reports. Since many charts rely on visual cues to communicate information, such as data categories and values, it may be preferable to use reports where possible. If it is necessary to use a chart, adding data labels can be a compromise, as in some chart types, the screen reader reads out data labels as the user

navigates through the content. When creating reports, it may be advisable to limit the number of fields that you use. This helps reduce the number of values in the report, making it easier to navigate. Simplification is always a best practice when creating accessible content.

Content items that you add to your page reside in containers. These can be basic panel containers, which each contains a single content item, or they can be a tab, accordion, or carousel container, which can hold multiple items on different tabs, accordion panels, or carousel slides, respectively. Although each of these container types is accessible, when building accessible pages, using basic panels without sub-panel sections can provide a more intuitive user experience.

When adding filters to a page, keep in mind that certain filter controls are easier to navigate than others. If possible, avoid using the calendar control to filter a date field. Instead, consider the option of using content items with separate filters for individual date components, such as years, quarters, months, or days. These component filters can use a dropdown control, which is easier to navigate.

You can improve the accessibility of your filter controls by adding a tooltip with information about the type of control and the values that the user can select. To add a tooltip to a control, select it and, on the **Settings** tab, in the **General Settings** area, type text for the **Tooltip** property that you want to display when you point to the control at run-time. You can also double-click the control label on the canvas to type a more descriptive title for the control. By default, the title of the field is used.

Create New Content in WebFOCUS Designer

Use the following steps to create a chart or report, which you can transform into a page, in WebFOCUS Designer.

Procedure

1. On the WebFOCUS Home Page, press Ctrl + Shift + F10 to open the navigation menu.
2. Use the Down Arrow key to navigate to the **Toolbar** and then press the Enter key.
3. Press the Tab key twice to navigate to the **Visualize Data** button, and then press the Enter key.

   WebFOCUS Designer opens in a new tab, where you are prompted to select a data source.

4. In the Select Data Source dialog, use the Tab key to navigate to the Workspace menu.
5. Use the Down Arrow key to expand the Workspace menu and navigate to a workspace in your environment from which you can access the data source that you want to use, then press the Enter key to select it.

   The file explorer in the Select Data source dialog is populated by the application folders, Master Files, and Reporting Objects available from the selected workspace.
6. Use the Tab key to navigate to the **Flat View** button. Press the Enter key to switch to the flat view in the file explorer, making all data sources available for selection without having to navigate into subfolders.
7. Use the Tab key to navigate inside the file explorer. Use the Down Arrow and Up Arrow keys to navigate to the data source that you want to use, and then press the Enter key to select it.

   The WebFOCUS Designer canvas loads, and you can begin creating your content.
8. To save your content, press Shift + Control + F10 to open the navigation menu. Navigate to the **Tool Menu** and press the Enter key. Press the Enter key again to open the Application menu. Use the Down Arrow key to navigate to **Save**, and then press the Enter key. The Save dialog opens. Use the Tab key to navigate to the **Save** button, and then press the Enter key.

Navigate an Accessible Page Created in WebFOCUS Designer

When you run a page created in WebFOCUS Designer, you can use keyboard controls to navigate through different page components, including page and panel toolbars, filters, and sub-container sections. Components are labeled for screen reader use.

To quickly jump to a specific section of the page, press Ctrl + Shift + F10 to open the navigation menu. Otherwise, navigate from the top of the page using the following steps.

If you are using JAWS as your screen reader, press Insert + Z on your keyboard to enter Forms mode, allowing you to set values for controls more easily.

Procedure

1. From the WebFOCUS Home Page, press Ctrl + Shift + F10 to open the navigation

menu. Press the Space bar to open the **Header** submenu, then press the Down Arrow key three times to focus on the **Workspaces** option. Press the Enter key to navigate to the **Workspaces** option on the WebFOCUS Home Page toolbar, and press the Enter key again to open the Workspaces view.

2. In the Workspaces view, navigate to the page that you want to run. Press Shift + F10 or the Menu key to open the shortcut menu. Press the Down Arrow key to navigate to the collapsed **Run** menu. Press the Space bar or Enter key to expand the run menu. With focus on **Run in new window**, press the Enter key to run the page in a new browser tab or window.
3. Press the Tab key to start navigating the page. The first element should be the page title.
4. Press the Tab key again to move to the next element, which is the **Refresh** button, by default. Press the Enter key to refresh all items on the page.
5. Press the Tab key to navigate to the **Hide Filter** button. The filter bar displays by default if there are any filters added to it. Press the Enter key to hide the filter bar, and press the Enter key again to show the filter bar again.
6. Press the Tab key to navigate to the **Export to file** menu. By default, you can export a page as a PDF or a .png image. When creating the page, you can set options to export only one file type, in which case this menu becomes a button, or not allow export. Press the Enter key to expand the menu, use the Down Arrow key to navigate to an export file type, and press the Enter key again to export a snapshot of the page. To close this menu without selecting an option, press the Esc key.
7. Press the Tab key to navigate to the filter bar, if there are filters added to the page. Once you have placed focus on a filter control, you can set filter values using a different set of steps, depending on the control type.
    - To select values from a dropdown list, press the Space bar to open the dropdown menu. Use the Down Arrow and Up Arrow keys to navigate through the list of values, and use the Space bar or Enter key to select values. Press the Esc key to close the dropdown menu and apply your selections. If the filter is single-select, the menu closes as soon as you select a value.
    - To select values from a list of checkboxes or radio buttons, use the Tab key to navigate through each item in the list. Press the Space bar or Enter key to select or clear a checkbox or select a radio button. Checkbox controls allow you to select multiple values, while radio button controls allow you to select a

single value.

- To select values from a button set, once you have placed focus on the control, press the Tab key again to enter the control, then use the Left Arrow and Right Arrow keys to navigate between values in the button set. Press the Enter key or Space bar to select a value. A button set may be single select or multiselect.
- To set a numeric range using a slider control, once you have placed focus on the control, use the Left Arrow and Right Arrow keys to set the lower end of the slider, then press the Tab key and use the Left Arrow and Right Arrow keys to set the high end of the slider. Once you are done setting the slider range, press the Tab key to advance to the next page component.

8. Once you have navigated through all filter controls, press the Tab key to navigate to the title bar of the first container. Press the Tab key again to navigate to the Maximize button on the container. Press the Enter key or Space bar to maximize the container, and press the same key again to collapse the container once it has been maximized.
9. Press the Tab key again to navigate to the run-time menu of the container. Press the Enter key or Space bar to open the menu and place focus on the Refresh button. Press the Enter key or Space bar to refresh the content in the container. Press the Esc key to close this menu without refreshing the container.
10. If the container includes multiple content items on separate tabs, accordion panels, or carousel slides, press the Tab key to navigate to the first sub-containers. You can navigate to each sub-container using different methods depending on the container type.
    - To navigate between tabs in a tab container, press the Tab key to navigate to the first tab, then use the Right Arrow and Left Arrow keys to focus on different tabs. Press the Enter key or Space bar to display the selected tab.
    - To navigate between panels in an accordion container, press the Tab key to navigate to the first panel, then use the Up Arrow and Down Arrow keys to focus on different panels. Press the Enter key or Space bar to expand a collapsed panel or collapse an expanded panel. When you expand an accordion panel, all other panels automatically collapse.
    - To navigate between slides in a carousel container, press the Tab key to place focus on the Previous Slide button. Press the Enter key or Space bar to display the previous slide in the carousel. The slides cycle continuously, so you can

navigate through the first and last slides. Press the Tab key four more times to navigate to the Next Slide button. Press the Enter key or Space bar to display the next slide in the carousel.

11. From the run-time menu in a basic panel container, or from a tab, the last accordion panel header, or the Next Slide button in a carousel container, press the Tab key to place focus on the content item. Depending on the content type, some information about the item is read out. Use the arrow keys to navigate through text labels in a chart or values in a report.

    Press the Tab key again to navigate to the next container.

Assemble a Page From Existing Content in WebFOCUS Designer

Use the following steps to create a page from existing charts, reports, images, and other content items.

Procedure

1. On the WebFOCUS Home Page, press Ctrl + Shift + F10 to open the navigation menu.
2. Use the Down Arrow key to navigate to the **Toolbar** and then press the Enter key.
3. While focused on the plus button, press the Enter key to open the What would you like to do menu.
4. Use the Tab key to navigate to the **Assemble Visualizations** button, and then press the Space bar.

   WebFOCUS Designer opens in a new browser tab, and you are prompted to choose a template for your page.
5. To add a content item to the page, run the following steps:
   a. Press Ctrl + Shift + F10 to open the navigation menu.
   b. Use the Down Arrow key to navigate to **Resources**, and press the Enter key.

      Focus moves to the Outline tab, which is the first tab on the sidebar.
   c. Use the Down Arrow key to navigate to the Content tab on the sidebar. Press the Enter key or the Space bar to open it.

   d. Press the Tab key to navigate to the search bar, to search for an item by name, or to the resources tree. Use the Down Arrow and Up Arrow keys to navigate through items in a folder, and use the Right Arrow and Left Arrow keys to navigate into and out of folders in the repository file hierarchy.

   e. Press the Enter key or the Space bar to add the item to the page. Each item is placed in its own container. The new containers become available from the navigation menu, so you can easily select them.

6. To select a container on the page, press Ctrl + Shift + F10 to open the navigation menu, and then use the Down Arrow key to navigate to **Resources**. Press the Enter key to move focus to the Outline tab on the sidebar. Press the Tab key twice to enter the outline, then use the arrow keys to navigate to the container that you want to edit.

7. To resize a container, use the Shift key and an arrow key. Shift + Right Arrow expands the container to the right, while Shift + Left Arrow contracts the container from the right. Similarly, Shift + Down Arrow expands the container downward, while Shift+ Up Arrow shrinks the container from the bottom. You can use the Delete key to delete the selected container.

8. To configure or modify the container using the options on the Settings and Format tabs, select the container, and then press Ctrl + Shift + F10 to open the navigation menu. Use the Down Arrow key to navigate to **Settings/Format**. Press the Tab key once to focus on the tab label. You can use the Right Arrow and Left Arrow keys to navigate to the Settings or Format tab, and press the Enter key or Space bar to open it. Use the Tab key to navigate to different options. You can use the Enter key or Space bar to toggle options on or off, and type text into text boxes.

Open an Existing Chart, Report, or Page in WebFOCUS Designer

You can access any content items saved in your repository from the Workspaces view. You can navigate to items in different workspaces, and open them from the file explorer.

Procedure

1. On the WebFOCUS Home Page, press the Tab key to navigate to the **Workspaces** button, then press the Enter key.

> **Note:**
> If you have already navigated within the page, you can return to the area that contains the Workspaces button by pressing Ctrl + Shift + F10 to open the navigation menu, using the Down Arrow key to navigate to the **WebFOCUS Home** option, and pressing the Enter key.

Create a New Chart or Report in WebFOCUS Designer

Build new charts and reports by selecting a content type and then adding measure and dimension fields to the appropriate buckets.

Procedure

1. Create a new visualization in WebFOCUS Designer and select a data source as described in Create New Content in WebFOCUS Designer.
2. The default content type is a stacked bar chart. Optionally, select a different chart type or report layout from the Content picker.
    a. Press Ctrl + Shift + F10 to open the navigation menu.
    b. Use the Down Arrow key to navigate to **Templates**, and then press the Enter key to expand the list of available content types.
    c. Press Shift + Tab and the Tab key to navigate through the list of chart types and report layouts.
    d. With focus on the content type that you want to use, press the Enter key to select it.
3. Next, add fields to your content. Press Ctrl + Shift + F10 to open the navigation menu.
4. Use the Down Arrow key to navigate to **Resources** and then press the Enter key.

   Focus jumps to the Outline tab, on the sidebar.
5. Press the Down Arrow key to navigate to the Fields tab on the sidebar, and press the Enter key to open it.
6. Press the Tab key multiple times until you have navigated to the top-level folder in the Dimensions area of the field list, and then use the Down Arrow and Up Arrow

keys to navigate through the list of dimension fields. You can expand a folder by using the Right Arrow key, or collapse it by using the Left Arrow key.

7. With focus on the dimension field that you want to use as the primary sort field in your content, press Shift + F10, or the Menu key to open the shortcut menu.
8. With focus on **Add to chart** or **Add to report** in the shortcut menu, press the Enter key. The field is automatically added to the default dimension bucket in your content.
9. Optionally, add more dimension fields to your content. They are placed in the default buckets for additional dimensions, based on the selected content type.
10. Once you have selected dimension fields, press the Tab key twice to enter the Measures area of the field list. Use the arrow keys to navigate to the measure field that you want to use.
11. With focus on the measure field that you want to add to your content, press Shift + F10, or the Menu key to open the shortcut menu.
12. With focus on **Add to chart** or **Add to report** in the shortcut menu, press the Enter key. The field is automatically added to the default measure bucket in your content.
13. Optionally, add more measure fields to your content. They are placed in the default buckets for additional measure fields, based on the selected content type.

Style and Format Content in WebFOCUS Designer

The Format tab, on the Properties panel, provides options to style and format different areas of a chart or page. It also allows you to select a theme for your content, and change the output format of a chart or report.

When creating a single chart or report in WebFOCUS Designer, all options, in the Format tab and in other areas of the interface, apply to the item being created. When creating a page, the Format tab provides options to style the last selected page component, which may be the entire page, a page section, a container, the filter toolbar, a filter cell, or a content item. To select an item in a page, use the Tab key to move focus to it, then press the Enter key or Space bar.

Procedure

1. In WebFOCUS Designer, press Ctrl + Shift + F10 to open the navigation menu.

2. Press the Down Arrow key to navigate to **Settings/Format**, and then press the Enter key.
3. Press the Tab key to focus on the Settings tab, then press the Right Arrow key to move focus to the Format tab, and press the Enter key to open it.
4. When creating a chart or report, press the Tab key to move focus to the quick access menu. the General options display by default. When creating a chart, press the Down Arrow key to open the quick access menu to access styling and formatting options for the Legend, Axis, Series, and more, depending on the chart type.

   When creating a page, different options appear depending on the page component that you selected prior to navigating to the Format tab. Use the Tab key to navigate to these options, which include themes, styles, margins, text styles, and more.
5. Once you have navigated to an option that you want to set or enable, press the Enter key or use the arrow keys to open the control, depending on the control type. Some options may be set using a dialog, which you can navigate using the Tab key or the arrow keys.

Add Prompted Filters to Your Content in WebFOCUS Designer

Filters allow you to narrow down your data, providing a more focused and digestible sample. When creating charts and reports, or pages created from new charts and reports, in WebFOCUS Designer, you can create prompted filters and static filters. Prompted filters apply to all content items created within a page, and provide intuitive filter controls. When prompted filters are added to a page created with new content, they are available at run time, allowing anyone who accesses the page to control the data that displays.

Procedure

1. In WebFOCUS Designer, when creating a chart or report, or a page with new content, navigate to the field for which you want to create a prompted filter. If you select a dimension field, a dropdown list control is created. If you select a date field, a calendar control is created. If you select a measure field, a two-headed slider is created.

   Press Ctrl + Shift + F10 to open the navigation menu, use the Down Arrow key to navigate to **Resources**, then press the Enter key.
2. Press the Down Arrow key to navigate to the Fields tab on the sidebar, and then

press the Enter key.

3. Use the Tab key to navigate into the field list. If you want to filter for a dimension field, use the Down Arrow key once focus has been placed on the Dimensions folder to navigate through the list of dimension fields. To filter for a measure field, continue tabbing until focus is placed on the Measure Groups folder, then use the Down Arrow key to navigate through the list of measure fields. Press the Left Arrow key collapse folders and the Right Arrow key to expand folders, as needed.
4. When you have arrived at the field for which you want to create a filter, press Shift + F10 or the Menu key to access the shortcut menu.
5. Use the Down Arrow key to navigate to **Add to filter toolbar**, and then press the Enter key.

   A filter prompt for the field that you selected is added to the filter toolbar.
6. Next, set the default values for the filter. Initially, the filter is set to display all values, so no data is filtered out.

   Press Ctrl + Shift + F10 to access the navigation menu.
7. the Down Arrow key to navigate to **Settings/Format** and press the Enter key. Press the Tab key multiple times until you arrive at the first filter control in the filter toolbar carousel. Use the Right Arrow and Left Arrow keys to navigate to the filter for which you want to select values.
8. Optionally, press Shift + F10 or the Menu key to open the shortcut menu and change filter options.

   You can choose whether a dimensional filter includes or excludes the selected values, whether it is multi-select or single-select, and whether filter selections are required.

   For date filters, you can choose whether the range has a start and an end point or is open ended, and you can make the filter selections required.

   For numeric filters, you can choose whether the range is open-ended, make selection required, and choose an aggregation to apply to the filter. By default, the sum aggregation is applied, but you can filter on **Detail** values to filter based on individual measure values from the data source, or use a different aggregation, such as average or count.
9. Press the Enter key or Space bar to open the filter control.

   If you are filtering an alphanumeric dimension field, use the dropdown list to select

filter values. Use the Tab key to navigate to the search bar, **Select all** button, **Clear** button, list of available values, and paging controls. Use the Space bar or Enter key to select a value.

If you are filtering a measure field, press the Enter key or Space bar to open the slider control. First, use the Right Arrow and Left Arrow keys to set the lower end of the slider, then press the Tab key and use the Right Arrow and Left Arrow keys to set the upper end.

10. When you are done setting filter values, press the Esc key to close the filter control.

Apply Prompted Filters From Existing Content in WebFOCUS Designer Pages

If external content used prompted filters or dynamic parameters, then when it is added to a page, you can instantly create filter controls for them.

Procedure

1. Press Ctrl + Shift + F10 to open the navigation menu. Press the Down Arrow key to navigate to the **Page Menu**, and then press the Enter key.
2. Press the Tab key to navigate to the **Add all filters to page** button.
3. Press the Space bar or Enter key to create controls for all prompted filters or dynamic parameters in content that was added to the page.

Customizing a Prompted Filter Title

To customize the title of a prompted filter:

1. Add the desired filter to the filter bar in a chart, report, or author page.
2. Right-click the prompted filter pill.
3. From the context menu, select the "Edit Title" option.
4. A flyout displays the existing title.
5. Enter the desired new title in the text box.

The filter pill instantly reflects the new, user-defined title.

Renaming Prompted Filters

Parameters within filters can be renamed directly from the authoring interface.

1. Right-click the prompted filter pill in the chart, report, or author page.
2. From the context menu, select **Rename parameter**.
3. A flyout menu displays:
    a. For a single-parameter filter, a single text box appears.
    b. For a two-parameter filter, two boxes appear.
4. Click **OK** after entering the desired name to apply the changes.

Note:

- The first character of a parameter name must be a letter.
- The following characters are invalid: plus sign (+), minus sign/hyphen (-), asterisk (*), slash (/), period (.), ampersand (&), and semicolon (;).
- Range filters, such as dates, use two parameters: "To" and "From." Rename both parameters.

Creating Content in ibi WebFOCUS Designer

You can visually convey the information in your data source using a wide variety of chart types and tabular reports with different layouts and sort orders. You can save and share content items individually, create multiple content items as a page, or edit existing content should a scenario change. Because of its flexibility, WebFOCUS Designer provides you with the platform and tools you need to create charts that communicate overall trends quickly with eye-catching and intuitive graphics, enhanced with automatic tooltips and filtering capabilities, reports that allow you to organize even the most granular data into an easy-to-understand tabular format, and maps that make it easy to display geographic data to make it clear which areas are hotspots or may deserve more investigation. You can create multiple items together in pages for easy cross-comparison or use them as standalone components. You can then share them with others in your organization to facilitate collaboration, which is central to effective business practices.

Many charts, reports, and maps show contrasting intersections of data, giving you the opportunity to share useful information that conveys patterns in your data. WebFOCUS Designer provides you with access to different types of simple and complex charts in a suite of charting options. You can use simple charts to communicate important KPIs and other straightforward metrics to get information clearly and memorably. More complex charts can be used to investigate numerous relationships between different aspects of your data, giving you a more overarching view.

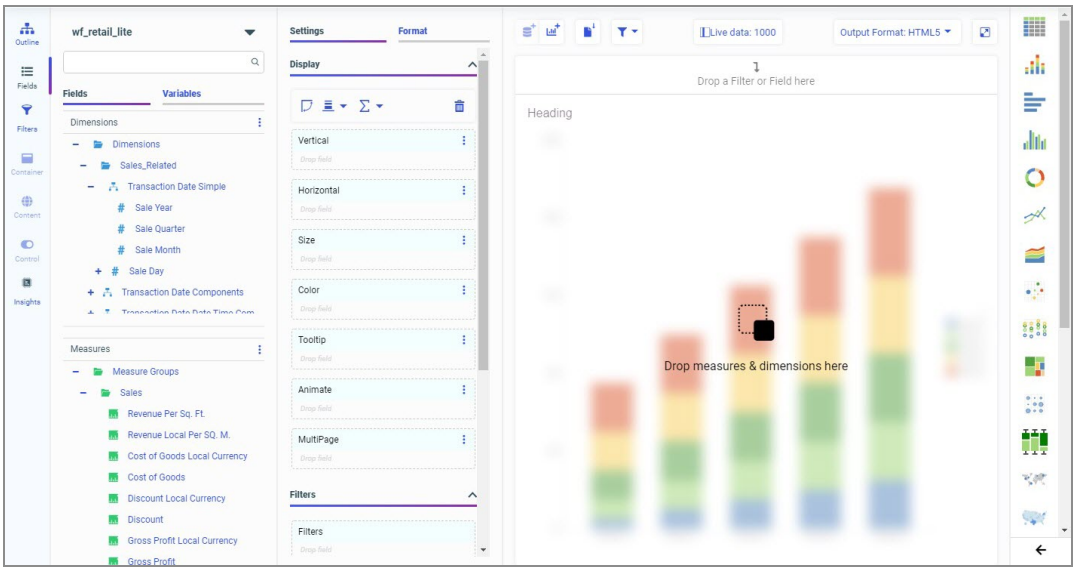
You can focus in on precise data values in a report, where you can supply large quantities of information in a digestible format that makes it easy to identify and locate key values. A report thereby allows you to combine a broad overview of your enterprise data with exact values for every data point.

Maps take the effectiveness of chart based reporting and tailor it to display geographic data. You can communicate simple information with a basic bubble map or choropleth map, or create maps with multiple levels to show the interplay of different metrics in locations around the globe. You can create maps that are as precise as you need, from a regional level all the way down to postal codes.

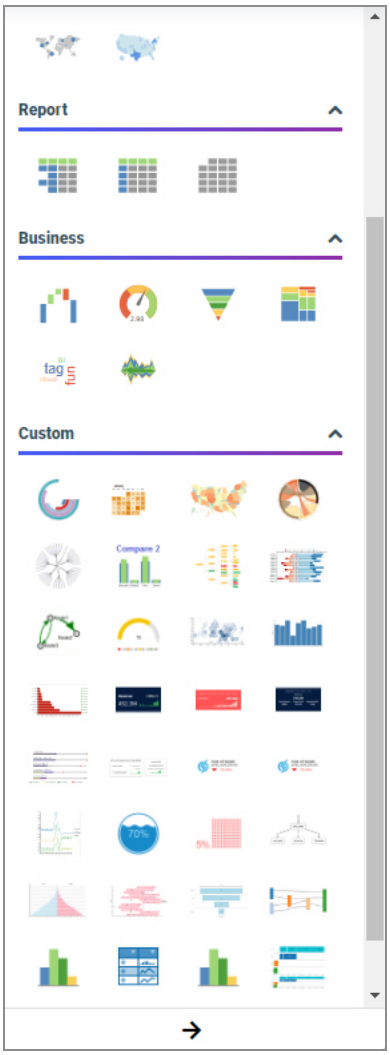
All of these content types can be enhanced with run-time capabilities such as prompted filters and In-Document Analytics, which allows users to transform content and modify the display of data at run time. For single items, you can also enable Auto Drill, which makes it possible to navigate data hierarchies, Auto Linking which allows you to connect to and from other content with related parameters, and Insight, which allows you to modify and build content at run-time.

Creating a visualization with new content begins with the selection of a data source, which provides the underlying data that is used to create your content. You can select a Master file (.mas) or a Reporting Object (.ro) as your data source.

The following image shows the default WebFOCUS Designer interface when you create a visualization.



The default content type is a bar chart, but you can change it to another chart type, a report, or a map by using the Content picker, which is located to the right of your canvas. When you choose between the different chart types in the content picker, you can hover over each content type to display the name and the minimum data requirements to run it (for example, one measure and one dimension). You also have access to a number of chart extensions from the content picker, which are custom-made charts that can be installed by your administrator. You can view these by expanding the chart picker. Chart extensions display in the Custom section, as shown in the following image.



You select measures and dimensions from the Resources panel with the Fields tab selected on the sidebar. The Resources panel displays the fields that were populated from your data source. You can add fields to your content in the following ways: drag a field to the canvas, double-click a field, or drag a field into one of the buckets.

Once you have created some content, you can format it to enhance its appearance or style. For example, you might want to add a header and footer to identify your content and prepare it for distribution. Depending on the content type, you can access targeted formatting options that allow you to customize the Legend, Series, and Axis in a chart, the theme of a report, the background of a map, and more. Additional options display when working with certain content types. For example, there are special Matrix options to define the style of gridlines and labels for a matrix chart.

If you save your content as a single item, you can add it to visualizations that reference external content.

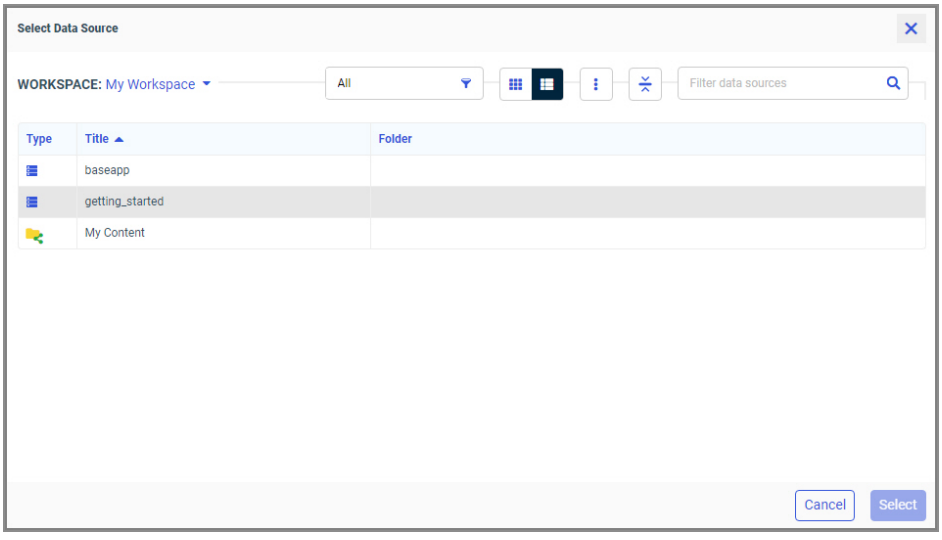
Alternatively, you can create multiple new content items within a single visualization. To add more content, click the **Convert to page** button on the Visualization toolbar. The visualization transforms from a stand-alone content item to a page. Select the content item with a container to edit it with the same set of options used to edit a stand-alone content item. Once a visualization is transformed into a multi-content page, you can add new content by clicking the **Add container** button, dragging a field from the Resources panel onto an empty area of the canvas, or by dragging a container onto the page.

If you have any multi-content containers in your visualizations, such as tabbed, accordion, or carousel containers, you can create content by dragging a field into the toolbar area of a container. The entire container is highlighted. When you drop the field, the Add Content dialog appears, prompting you to replace the content in the container or create content with the field in a new tab, accordion panel, or carousel slide.

Selecting a Data Source

To create a new visualization, such as a chart or report, you must first select a data source. This data source provides the fields and values that display in your content. It can be either a Master File, which is a data source description that allows you to structure the fields in a database or flat file into a more logical structure, or it can be a Reporting Object, which allows you to enhance a Master File with additional filters, default content items, and pre- and post-processing code. Both of these data source file types enable you to create content from data that you have uploaded or to which you have connected.

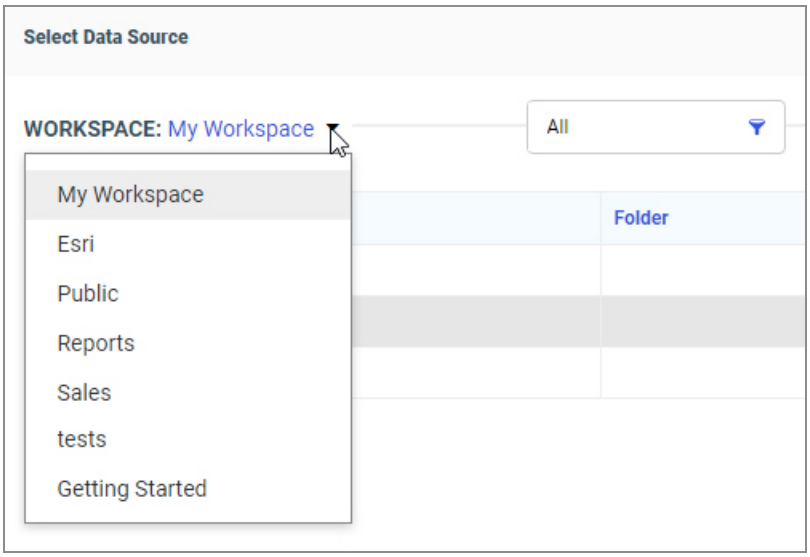
When you launch WebFOCUS Designer to create a new content item, you are prompted to select a data source, as shown in the following image.



The Select Data Source dialog provides a file explorer that you can use to navigate to and select a Master File or Reporting Object to use as a data source. In the default folder view, the file explorer shows application folders containing Master Files, as well as repository folders containing Reporting Objects and Master File shortcuts. You can navigate through the levels of folders to find the data source file that you want to use to create content.

The files shown are associated with the workspace that you select. Each workspace has an associated application path. The application path is a set of application folders on the server that are accessible from that workspace. Administrators can modify the application path for each workspace in order to provide different data sources to the users in each one. This is performed in the Properties panel on the WebFOCUS Hub. In the Workspaces area, right-click the workspace, click **Properties**, and click the **Server** tab. Select the **Assign Application Path** checkbox to specify the application folders that are available from the selected workspace, then save your changes.

In the Select Data Source dialog, the workspace from which you created your content is shown by default. You can change the workspace using the dropdown list on the toolbar at the top of the dialog to access data sources from different application folders, as shown in the following image.

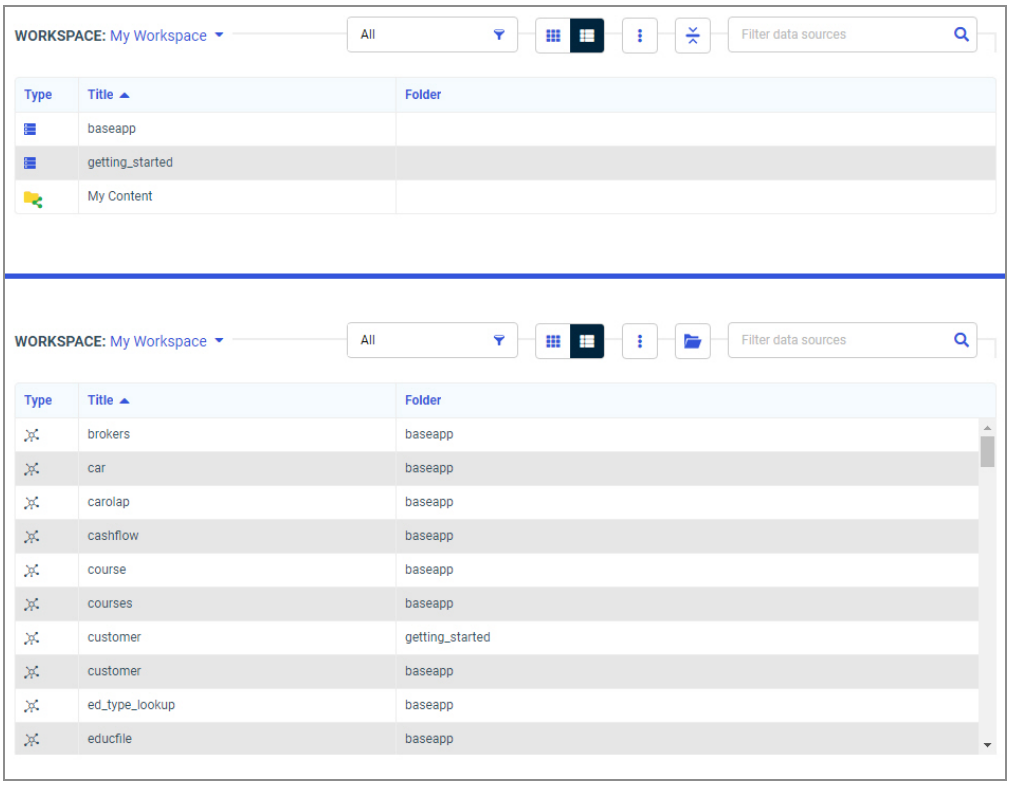


Options to filter and change your view of the folders and files in the file explorer are available on the toolbar, as shown in the following image.

Once you navigate to a folder containing available data sources, you can use the Filter by type menu to show only Master Files or only Reporting Objects instead of all items, so you can find the data source that you want to use more quickly.

You can also switch from the list view to a tile view, similar to the Workspaces area on the WebFOCUS Hub. When in list view, you can change the columns that display to see different information in the file explorer. You can sort these columns to find the data source you want to use more quickly based on different properties.

To see all data sources available from the selected workspace, switch from the folder view to the flat view . In the flat view, you can see all data sources from all folders and subfolders in the application path and workspace. The following image shows the items from My Workspace displayed in the file explorer when the folder view and flat view are selected.



Using the flat view may result in a very large number of data sources being shown, so if you know where the data source that you want to use is saved, it may be easier to find using the default folder view.

Finally, use the search bar to find a folder or data source that is currently displayed in the file explorer by name. The file explorer is filtered based on your search query. Clear the search bar to show all items in the file explorer again.

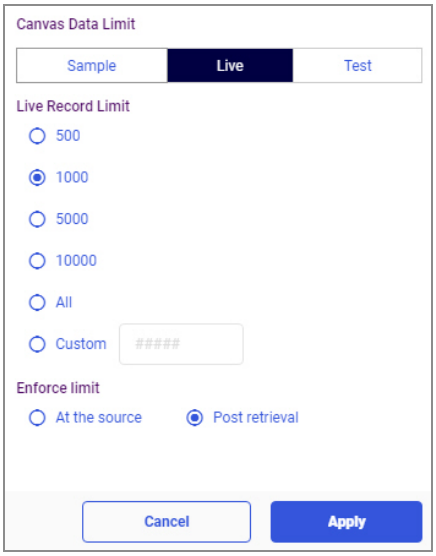
Once you have found the Master File or Reporting Object that you want to use as a data source, double-click it, or select it and then click **Select**, to begin creating your content.

Configuring Sample Data Settings

When you create charts, reports, and pages in WebFOCUS Designer, the canvas displays a design-time preview of your content. By default, the preview uses a subset of the data available in your selected data source, saving on the resource usage required in running a full data set, while still providing a representative and useful preview of your content.

By default, the data displayed when you design new content is limited to 1000 records, but you can change the sample data setting to display a representative sample from your data source or dummy test data instead of a set of the first aggregated records. You can also choose to display fewer or more records, and apply the record limit before or after aggregation when using live data.

To access the sample data settings, click the data settings button Live data: 1000 on the Visualization toolbar. The Canvas Data Limit dialog opens, as shown in the following image.



The Canvas Data Limit dialog includes the following options:

- Preview data type:
  - **Sample.** The data shown at design time is based on a representative sample of the records in your data source at a 99% confidence level. The sample is taken before aggregation and stored for use as you design your content.
  - **Live.** The data shown at design time is taken starting with the first records in your data source. You can specify the number of live data records to use, and whether this limit should be applied before or after aggregation.

    - **Test.** Values from the data source are not shown at design time. Instead, generic values are used to give a general sense of the structure and appearance of your content.

- **Record limit.** When using a data sample or live data, set the number of records used to produce the design-time preview. You can select All, 500, 1000, 5000, 10000, or select **Custom** to type a value of your choice. The default for live data is **1000**, limited to 1000 records, and the default for sample data is **All**, or the entire representative sample.
- **Enforce limit.** When using live data, determine when the record limit should be applied. If you select **Post retrieval**, the record limit is applied after aggregation, so, for example, if the record limit is 1000, the design-time view of your content can display up to 1000 values. If you select **At the source**, the record limit is applied to your data source before aggregation, so if the record limit is 1000, only the first 1000 records are read from the data source to display at design time.

Creating Charts

Charts communicate overall trends quickly with eye-catching and intuitive graphics. Charts come in many different varieties that allow you to communicate information with varying degrees of complexity and specificity. You can use simple charts to effectively communicate simple metrics, and more complex charts to clearly display relationships between different aspects of your data, making it easy to identify less obvious trends.

Different chart types utilize different kinds of data and enable different styling options. You can easily change chart types by selecting a different option from the Content picker, making it easy to ensure that you choose the chart type that best represents your data.

When creating your visualization, you can use tooltips and on-chart filtering to get the necessary information from your chart, and you can also enhance the chart with run-time capabilities such as drill-downs and In-Document Analytics to make even more information available from a single chart.

Create a Chart Using WebFOCUS Designer

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Use the Content picker to change the chart type, or use the default vertical stacked bar chart. The Content picker is shown in the following image.

4. Add measures by dragging them onto the canvas.

   Note:
   You can also double-click a measure to add it to the default measure bucket or drag it into an appropriate bucket of your choice.

5. Add dimensions by dragging them onto the canvas.

> **Note:** You can also double-click a dimension to add it to the default dimension bucket or drag it into an appropriate bucket of your choice.

The chart refreshes with your selections.

6. You can format your chart in the following ways:
   a. Edit the style, size, or format of your fonts.
   b. Modify the appearance or location of your legend.
   c. Modify axis options.
   d. Add a header and footer.
   e. Customize the series in your chart.
7. On the WebFOCUS Designer toolbar, click **Save** to save your chart.

   When you create a single chart and save it for the first time, it is saved as a stand-alone chart, which allows you to add it as external content to pages. If you click **Convert to page** on the Visualization toolbar, your content becomes a page to which you can add more content and containers. After this point, it is saved as a multi-content page.

   You can now continue editing your chart, or add more charts to the visualization to turn it into a page.

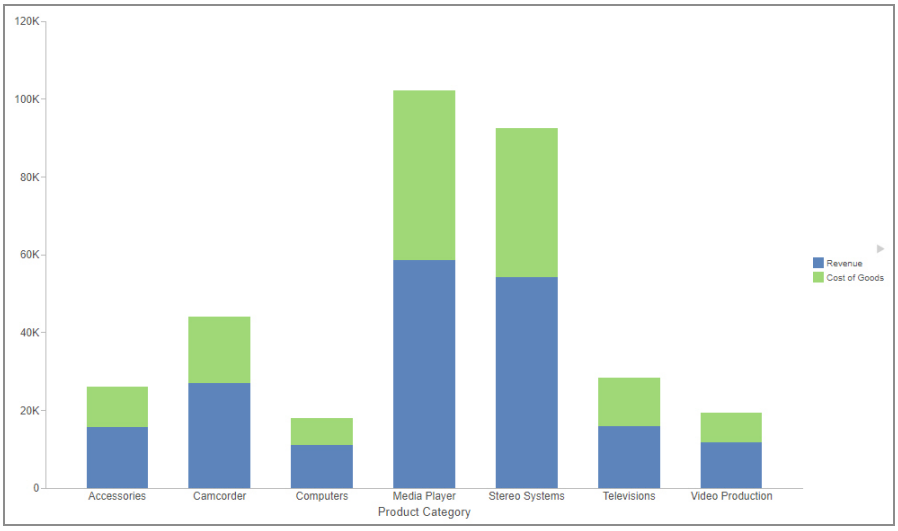
   > **Note:** Field Length Specifications:
   > - Name: Maximum 65 characters.
   > - Summary: Maximum 2048 characters.

8. To reopen your chart once you have exited WebFOCUS Designer, locate it on the Hub, right-click it, and click **Edit** from the shortcut menu.

Creating Vertical Stacked Bar Charts

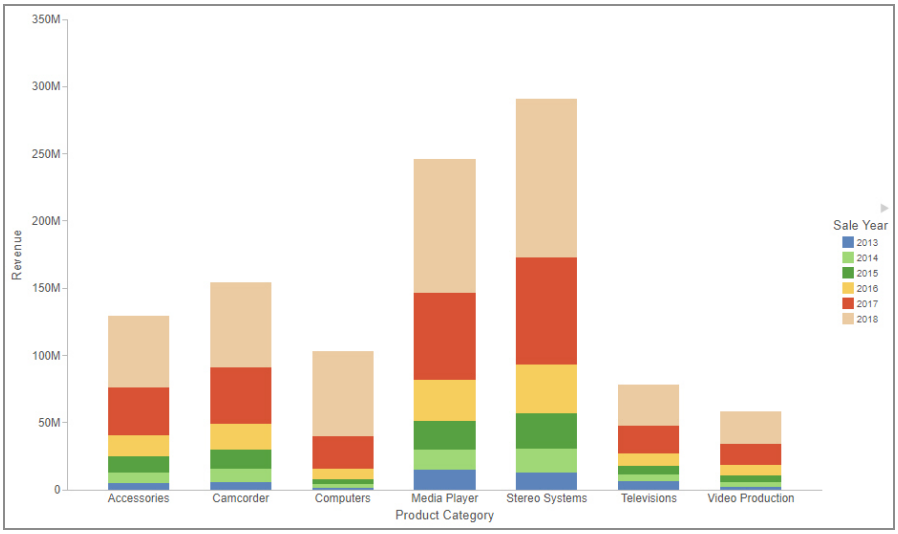
Use a vertical stacked bar chart when you want to view information for one dimension within another dimension. For example, when you want to see which product subcategories accounted for the most sales within each product category.

If you use one measure in the Vertical bucket and one dimension in the Horizontal bucket, a simple bar chart is created, with no stacked segments. Vertical stacked bar charts require at least one measure and one dimension. If you add a second measure to the Vertical bucket, a second series is created for the new measure and a new segment is placed on top of the first measure in each bar, as shown in the following image.



Additional measures increase the number of segments in a stack.

If you instead add a dimension field to the Color bucket, colored segments are created for each value in that dimension field, as shown in the following image.



Additional fields added to the color field create additional segments based on concatenated values.

The following display options are available for a vertical stacked bar chart:

- **Change chart orientation.** Switches the horizontal and vertical axes, making the bars horizontal.
- Chart layout options:
  - **Stacked.** When selected, creates a vertical stacked bar chart.
  - **Side-by-Side.** When selected, creates a vertical side-by-side bar chart, in which the series are placed side-by-side in groups.
  - **Absolute.** When selected, creates a vertical absolute bar chart, in which the series are layered in front of one another.
  - **Percent.** When selected, creates a vertical percent bar chart. Each series is stacked to show a proportion of each bar instead of their actual value.
- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a vertical stacked bar chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of each bar. Additional measures create additional segments in each bar. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon . Additional dimensions create matrix rows.
- **Horizontal.** The first field is added to the horizontal axis to create a bar for each unique value. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field or matrix column .
- **Size.** Controls the width of the bars based on a measure value.
- **Color.** If a dimension field is used, creates segments for each value. If a measure field is used, applies a color scale to the bars.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you

move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Vertical Stacked Bar Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

   Vertical stacked bar is the default chart type. If you have a different content type selected by default, select the vertical stacked bar chart option from the Content picker.

3. Add one or more measures and dimensions to the chart.

   The vertical stacked bar chart refreshes with your selections.

4. You can perform the following tasks with your vertical stacked bar chart:

   a. Add additional measures or dimensions to the chart, where applicable.

   b. Change the fields to obtain different information.

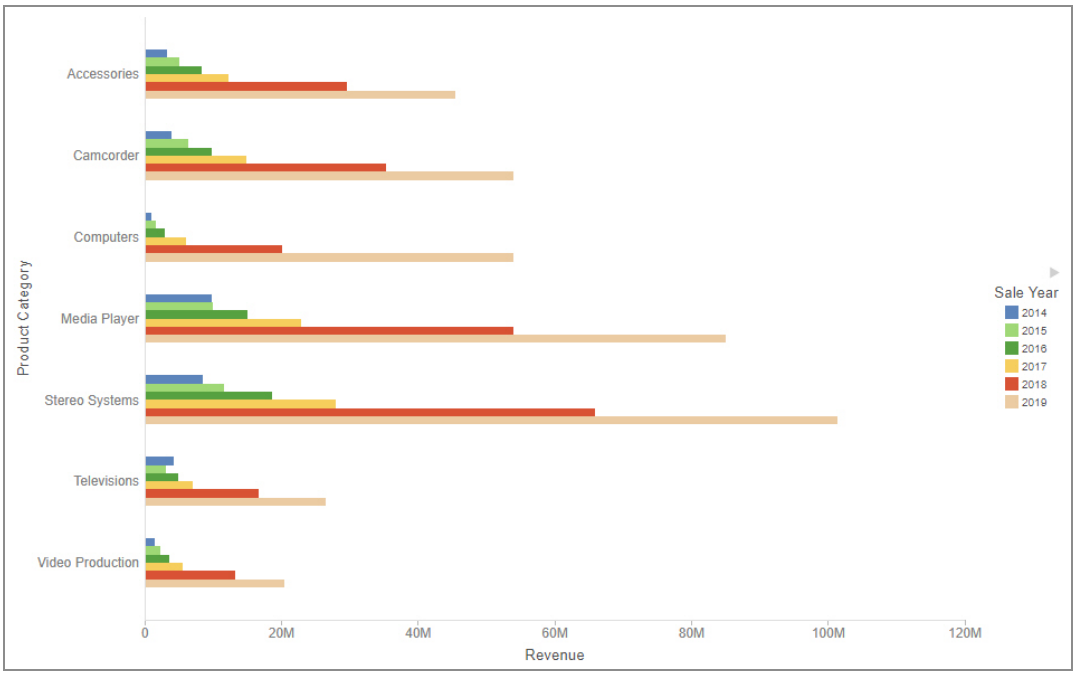
   c. Format the chart (for example, customize the header and footer or style the legend).

5. Save your vertical stacked bar chart as a stand-alone chart, or as part of a page.

Creating Horizontal Bar Charts

Use a horizontal bar chart when you want to emphasize a ranking relationship in descending order. This chart type can also be used when the x-axis label is too long to fit legibly side-by-side.

If you add additional measure fields to the Horizontal bucket or add dimension fields to the Color bucket, additional bars are placed in groups for each vertical axis value. A horizontal bar chart with multiple dimension fields is shown in the following image.



Note: Horizontal bar charts require at least one measure and one dimension. Add measures as required to compare additional values.

To sort the bars from high to low, right-click a measure value in the Horizontal bucket and click **Sort descending**.

The following display options are available for a horizontal bar chart:

- **Change chart orientation.** Switches the horizontal and vertical axes, making the bars vertical.
- Chart layout options:
  - **Stacked.** When selected, creates a vertical stacked bar chart.

    - **Side-by-Side.** When selected, creates a vertical side-by-side bar chart, in which the series are placed side-by-side in groups.
    - **Absolute.** When selected, creates a vertical absolute bar chart, in which the series are layered in front of one another.
    - **Percent.** When selected, creates a vertical percent bar chart. Each series is stacked to show a proportion of each bar instead of their actual value.
- Calculation options:
    - **Summaries.** Sums measure values for each sort value. This is the default.
    - **Counts.** Provides a count of records in the selected measure field, for each sort value.
    - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

> **Note:** When sorting a bar chart, each series is treated as a unique bar. As a result, groups of series such as stacked bar segments, side-by-side groups, or absolute overlapping bars may be separated.

You can add fields to the following buckets for a horizontal bar chart:

- **Vertical.** The first field is added to the vertical axis to create a bar for each unique value. You can click the icon in the bucket field label to toggle between using the field as a vertical axis sort field or matrix row .
- **Horizontal.** The first field added to the vertical axis determines the height of each bar. Additional measures create additional series for each bar. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon . Additional dimensions create matrix rows.
- **Size.** Controls the width of the bars based on a measure value.
- **Color.** If a dimension field is used, creates a series for each value. If a measure field is used, applies a color scale to the bars.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control

has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Horizontal Bar Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

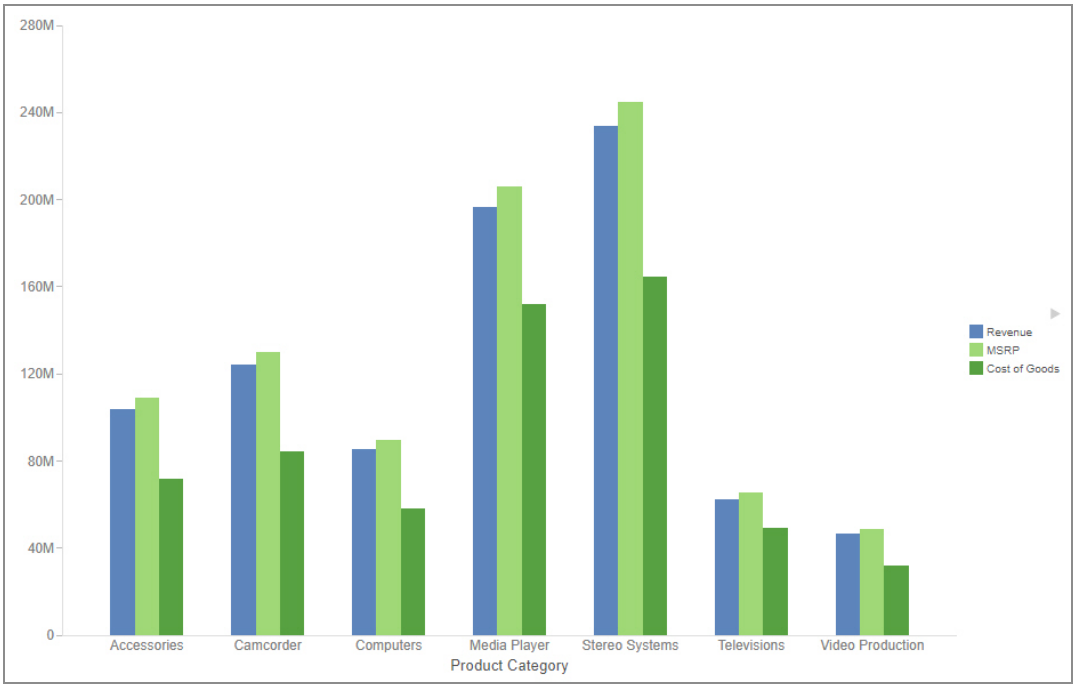
   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart type to a horizontal bar chart.
4. Add a measure and a dimension to the chart.
5. You can perform the following tasks with your horizontal bar chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your horizontal bar chart.

Creating Vertical Side-by-Side Bar Charts

Vertical side-by-side bar charts can be used to show additional measure or dimension values for each horizontal axis value using differing identifying colors. Side-by-side bar charts are useful to directly compare the values for different measures or categories within

each horizontal axis sort value. The following image shows a vertical side-by-side bar chart with one dimension field and multiple measure fields.



Note: This chart requires at least one measure and one dimension. Add measures as required to compare additional values.

The following display options are available for a vertical side-by-side bar chart:

- **Change chart orientation.** Switches the horizontal and vertical axes, making the bars horizontal.
- Chart layout options:
  - **Stacked.** When selected, creates a vertical stacked bar chart.
  - **Side-by-Side.** When selected, creates a vertical side-by-side bar chart, in which the series are placed side by side in groups.
  - **Absolute.** When selected, creates a vertical absolute bar chart, in which the series are layered in front of one another.
  - **Percent.** When selected, creates a vertical percent bar chart. Each series is stacked to show a proportion of each bar instead of their actual value.
- Calculation options:

    - **Summaries.** Sums measure values for each sort value. This is the default.
    - **Counts.** Provides a count of records in the selected measure field, for each sort value.
    - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a vertical side-by-side bar chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of each bar. Additional measures create additional bars for each horizontal axis value. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon . Additional dimensions create matrix rows.
- **Horizontal.** The first field is added to the horizontal axis to create a bar for each unique value. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field or matrix column .
- **Size.** Controls the width of the bars based on a measure value.
- **Color.** If a dimension field is used, creates bars for each value, placed in groups for each horizontal axis sort value. If a measure field is used, applies a color scale to the bars.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Vertical Side-by-Side Bar Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

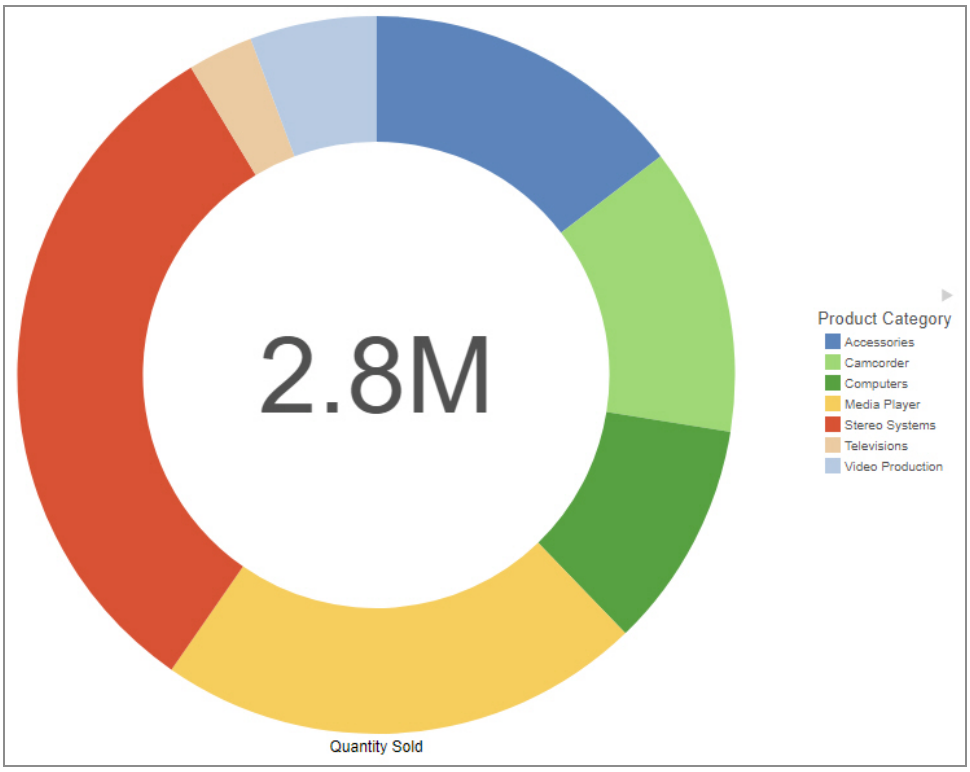
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Add one or more measures and dimensions to the chart.
4. You can perform the following tasks with your vertical side-by-side bar chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
5. Save your vertical side-by-side bar chart.

Creating Ring Pie Charts

Use a ring pie chart when you want to review the value of each segment, which represents the measure value for the selected dimension, as it relates to the total for the selected measure. The total value represented by all segments displays in the middle of the ring pie chart. The following image shows a ring pie chart.



Note: Ring pie charts require at least one measure (placed in the Measure bucket) and one dimension (placed in the Color bucket). Add additional measures as required to create a separate ring pie for each measure.

The following display options are available for a ring pie chart:

- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets in a ring pie chart:

- **Vertical.** Enables you to specify a field to display row data in a matrix chart. The use of measure fields is supported. Row data is displayed on the left side of the chart, along the y-axis.
- **Horizontal.** Enables you to specify a field to display column data in a matrix chart.

The use of measure fields is supported. Column data is displayed at the top of the chart, along the x-axis.

- **Measure.** Use this bucket to specify a measure that defines the size of segments in a pie chart. The Measure metric is used with the Color bucket for pie charts to create sections based on your field selections. Each field in the Measure bucket results in a separate ring pie chart.
- **Size.** When creating a matrix chart that contains ring pie charts, the size bucket controls the diameter of each chart based on a measure value.
- **Color.** Add a dimension field to the Color bucket to create a segment in the ring pie chart for each value.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Ring Pie Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

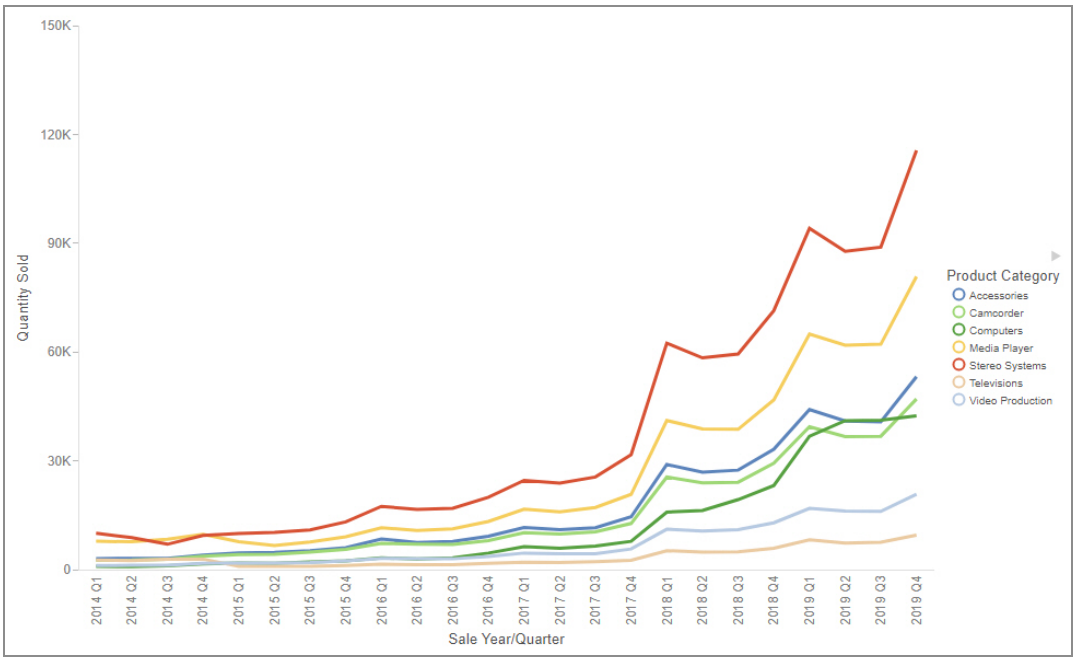
3. On the Content picker, change the chart to a ring pie chart.
4. Add one measure and a dimension to the chart.

   The ring pie chart refreshes with your selections.
5. You can perform the following tasks with your ring pie chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
   d. Change the size of the hole in the ring pie chart. On the Format tab, select **Series** from the area menu, then adjust the value of the Hole Size % property. Setting this property to 0 removes the hole entirely, creating a standard pie chart.
6. Save your ring pie chart.

Creating Absolute Line Charts

Use absolute line charts when you want to show trend data over time. For example, monthly changes in employment figures, or yearly sales of an item in your inventory.

Note: Absolute line charts require at least one measure and one dimension. Adding multiple measures or adding fields to the Color bucket creates additional lines on the chart, as shown in the following image.



The following display options are available for a line chart:

- **Change chart orientation.** Switches the vertical and horizontal axes so that the lines draw from top to bottom.
- Chart layout options:
  - **Stacked.** Stacks each line on top of the previous line, similar to a stacked bar chart. As a result, the value for each point on a line is a sum of the value represented by that point and all points for the same horizontal axis value below it.
  - **Absolute.** Each point on each line represents an absolute value.
  - **Percent.** When selected, the points in each line are stacked and represent a proportion of the total for each horizontal axis value instead of their actual value.
- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a line chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of points on the line. Additional measures create additional lines. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon . Additional dimensions create matrix rows.
- **Horizontal.** The first field is added to the horizontal axis to create a point on each line for each unique value. Additional fields create matrix columns. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field or matrix column .
- **Size.** Controls the thickness of the lines based on a measure value. The thickness changes at each point on the horizontal axis.
- **Color.** If a dimension field is used, creates additional lines for each value. If a measure field is used, applies a color scale to the lines.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create an Absolute Line Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

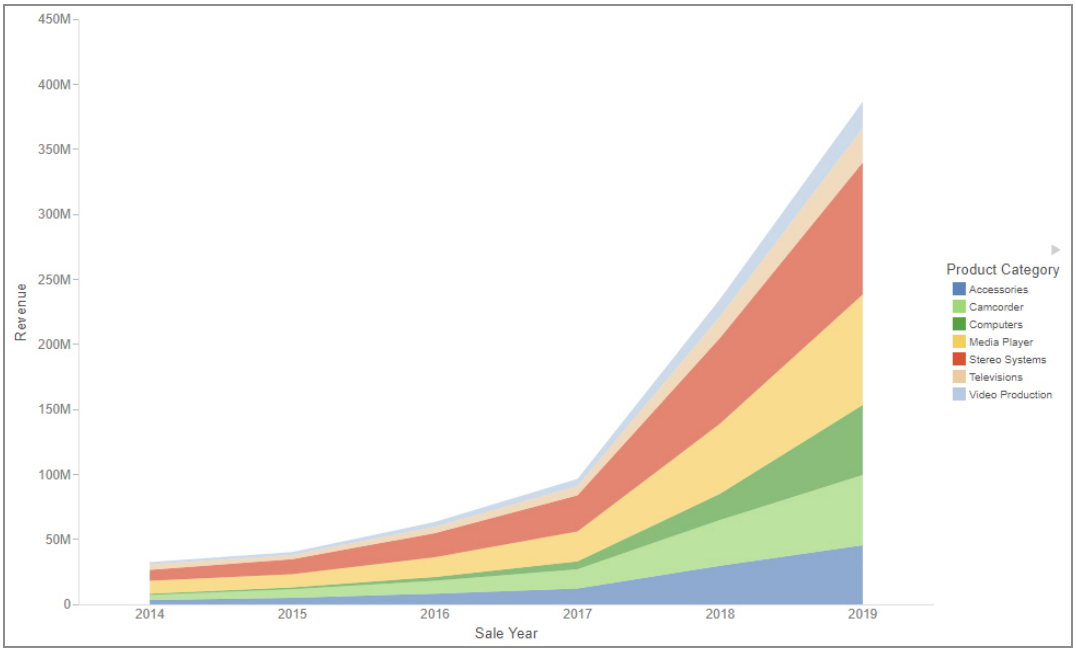
2. Select a workspace and a data source available from that workspace.

Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to an absolute line chart.
4. Add one or more measures and a dimension to the chart.
5. You can perform the following tasks with your absolute line chart:
    a. Add additional measures or dimensions to the chart, where applicable.
    b. Change the fields to obtain different information.
    c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your absolute line chart.

Creating Vertical Stacked Area Charts

Use vertical stacked area charts when you want to distinguish your data more dramatically by highlighting volume with color. In a vertical stacked area chart, each area is stacked on top of the sections below it, as shown in the following image.



Note: Vertical stacked area charts require at least one measure and one dimension. Adding multiple measures create additional shaded areas on the chart.

The following display options are available for an area chart:

- **Change chart orientation.** Switches the vertical and horizontal axes so that the lines draw from top to bottom.
- Chart layout options:
  - **Stacked.** Stacks each area on top of the previous area, similar to a stacked bar chart. As a result, the value for each point along the top of an area is a sum of the value represented by that point and all points for the same horizontal axis value in the areas below it.
  - **Absolute.** Each point in each area represents an absolute value. Areas are layered in front of each other.
  - **Percent.** When selected, the areas are stacked to fill the chart area and represent a proportion of the total for each horizontal axis value instead of their actual value.
- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for an area chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of points in the area chart. Additional measures create additional areas. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon . Additional dimensions create matrix rows.
- **Horizontal.** The first field is added to the horizontal axis to create a point at the top of each area for each unique value in the field. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field or matrix column .

- **Color.** If a dimension field is used, creates additional areas for each value. If a measure field is used, applies a color scale to the areas.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Vertical Stacked Area Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a vertical stacked area chart.
4. Add one or more measures and a dimension to the chart.

   The vertical stacked area chart refreshes with your selections.

5. You can perform the following tasks with your vertical stacked area chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the

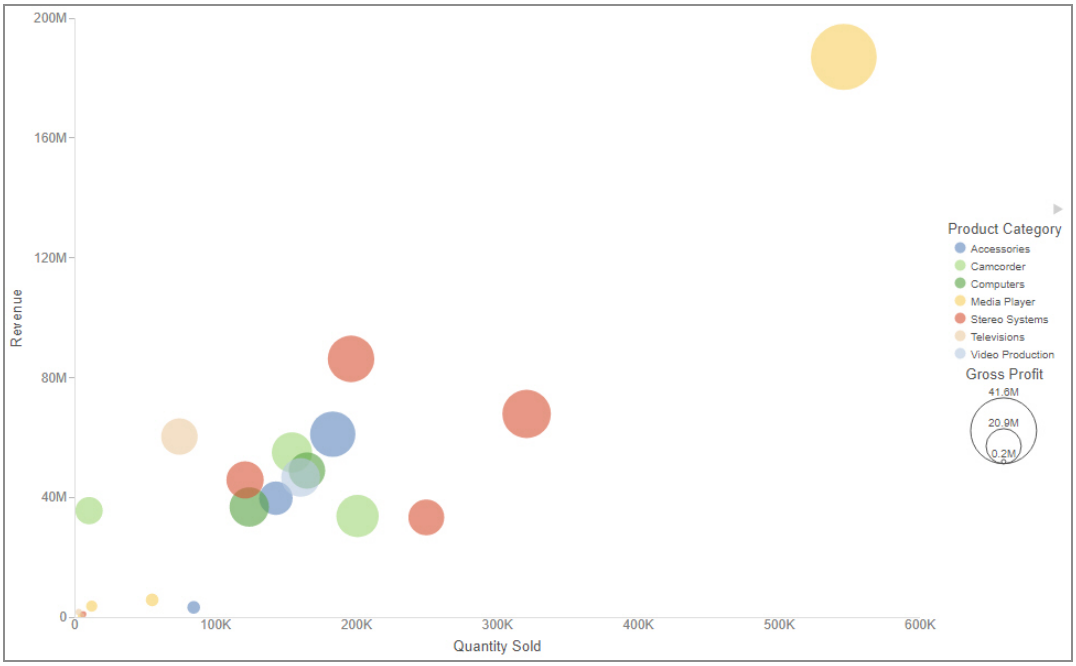
legend).

6. Save your vertical stacked area chart.

Creating Scatter/Bubble Charts

Scatter charts are used to show relationships between X and Y values. They compare two sets of numbers at once, which is useful for discovering patterns and trends.

A bubble chart is a chart in which the data points are represented by bubbles. Bubble charts can have two-column fields representing X and Y data values, or have three-column fields representing X, Y, and Z data values, in that order. The third variable (Z) represents size. The size of each bubble is used to show the relative importance of the data. A bubble chart can be used to effectively show the relationship between three measure fields, as shown in the following image.



Note: Scatter/bubble charts require at least two measures, and one dimension, which can be a color field or detail field. Optionally, add a dimension to the Size bucket using the count aggregation to view the concentration of data.

The following display options are available for a scatter plot or bubble chart:

- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a scatter plot or bubble chart:

- **Vertical.** Add a measure field to the vertical axis to determine the vertical position of points. Additional dimensions create matrix rows.
- **Horizontal.** Add a measure or dimension field to the horizontal axis to determine the horizontal position of points. Additional dimension fields create matrix columns.
- **Detail.** Use this bucket to add detail to your visualization by adding a data field to it. For example, if you add Sale, Quarter to the Detail bucket in your Scatter plot, the points on the plot are quadrupled, one for each quarter. In addition, the field that you specify in the Detail bucket also displays on the hover menu for each point in the plot.
- **Size.** Controls the size of each bubble based on a measure value.
- **Color.** If a dimension field is used, creates points or bubbles for each value and determines their color. If you also add a dimension to the Detail bucket, the values in the detail field are used to create points, and the values in the color field determine the color of the points. If a measure field is used, applies a color scale to the points.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Scatter/Bubble Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a scatter or bubble chart.

4. Add one measure and one dimension to the chart. Also, add fields in the Detail and Color buckets.

   The scatter/bubble chart refreshes with your selections.

5. You can perform the following tasks with your scatter/bubble chart:

   a. Add additional measures or dimensions to the chart, where applicable.

   b. Change the fields to obtain different information.

   c. Format the chart (for example, customize the header and footer or style the legend).

   d. Add trend lines. On the **Format** tab, select **Series** from the quick access menu and, with all series or a single series selected, click **Show trend line**. You can set the line style, trend line equation format, and, when using the polynomial equation, set the order or degree of the expression.

6. Save your scatter/bubble chart.

Accessing Marker Options

To access and configure marker options:

1. Select the scatter or bubble chart.

2. Navigate to the **Format** tab. Select **Series** options.

3. Within the marker style options, the following configurations are available:

a. **Marker Shape**: Choose a shape from a diverse dropdown list (e.g., Circle (Default), Ring, Square, Triangle) to assign a unique geometric identity to each series.

b. **Marker Size**: Adjust the overall size of all markers using a spinner, with a default size of 1 pixel, to ensure visual consistency across series.

c. **Marker Fill Style**: Select from various fill effects, each offering distinct visual cues:

    i. **Solid** (Default): A complete fill using the series' color.

    ii. **Auto**: A lightened series color fill with no border.

    iii. **Custom fill and border**: Provides full control over fill color, border color, and border width for customized designs.

    iv. **Hollow**: Uses the series color for the border with no fill.

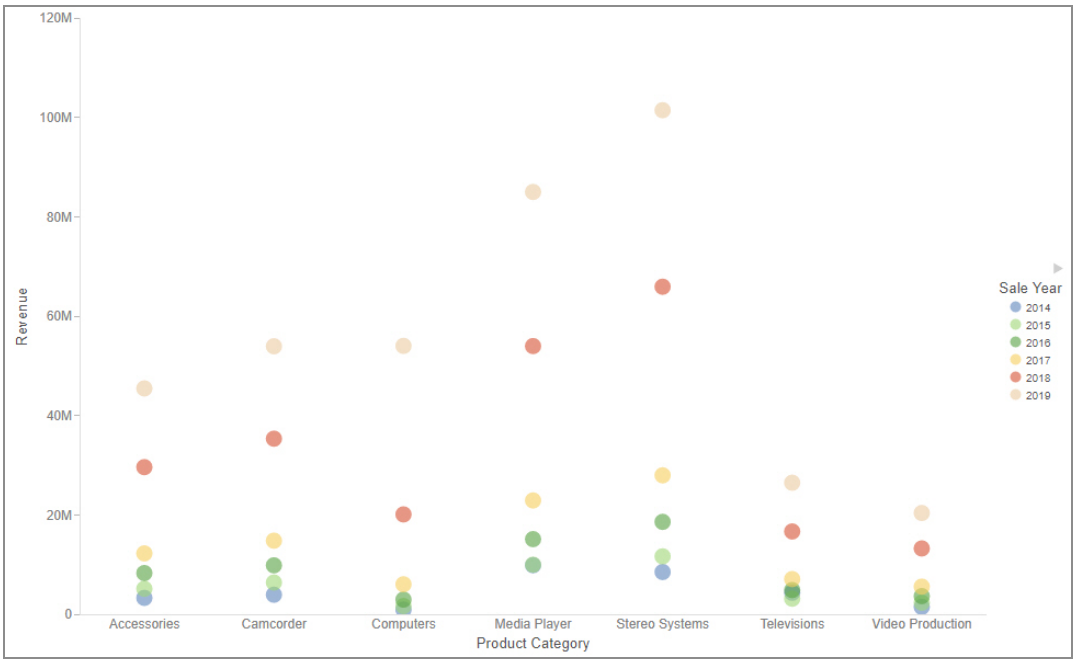
    v. **White**: Uses the series color for the border with a white fill.

    vi. **Opacity**: Applies a series color fill with adjustable transparency and a customizable border.

d. **Dynamic Controls**: As different fill styles are selected, relevant color swatches, border width controls, and opacity sliders dynamically enable or disable, providing a streamlined user experience.

Creating Circle Plot Charts

Use circle plot charts to display differing values in rows, enabling you to draw inferences as to how the values overlap. An example of a circle plot is shown in the following image.



Note: Circle plot charts require at least one measure and one dimension, as well as one for the Detail and Color buckets. Optionally, add a dimension to the Size bucket with the count aggregation to view the concentration of data.

The following display options are available for a circle plot chart:

- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a circle plot chart:

- **Vertical.** Add a measure field to the vertical axis to determine the vertical position of points. Additional dimensions create matrix rows.
- **Horizontal.** Add a dimension field to the horizontal axis to determine the horizontal position of points. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis field or matrix column.

- **Detail.** Use this bucket to add detail to your visualization by adding a data field to it. For example, if you add Sale, Quarter to the Detail bucket in your circle plot, the points on the plot are quadrupled, one for each quarter. In addition, the field that you specify in the Detail bucket also displays on the hover menu for each point in the plot.
- **Size.** Controls the size of each point based on a measure value.
- **Color.** If a dimension field is used, creates points for each value and determines their color. If you also add a dimension to the Detail bucket, the values in the detail field are used to create points, and the values in the color field determine the color of the points. If a measure field is used, applies a color scale to the points.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Circle Plot Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a circle plot.

4. Add one measure, one dimension to the chart. Also, add a field into the Detail and Color buckets.

   The circle plot chart refreshes with your selections.

5. You can perform the following tasks with your circle plot chart:

   a. Add additional measures or dimensions to the chart, where applicable.

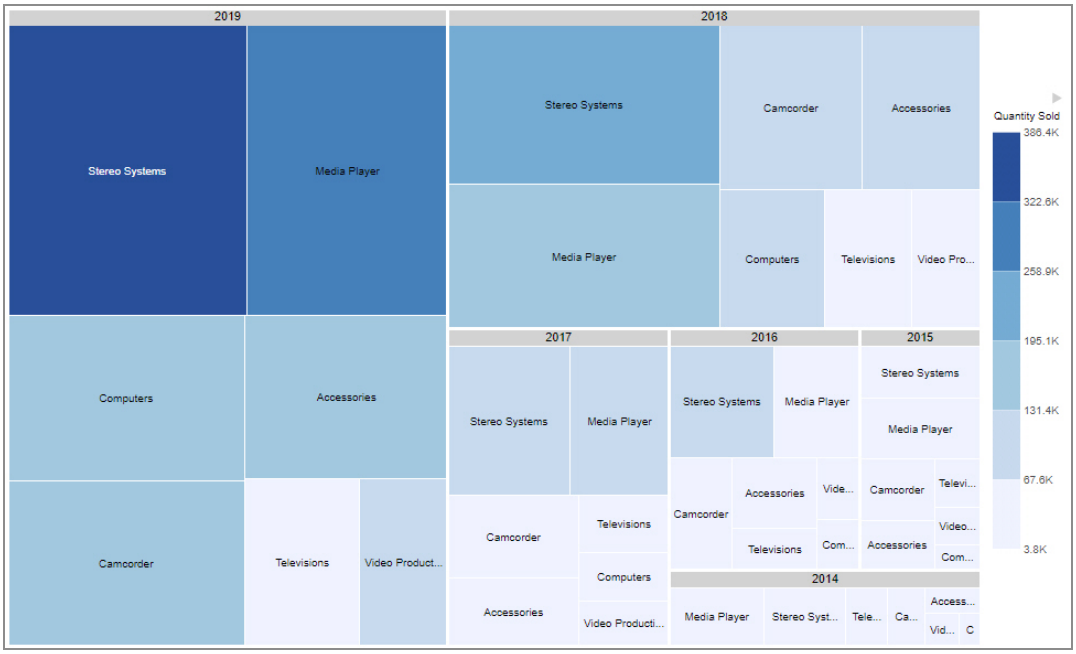
   b. Change the fields to obtain different information.

   c. Format the chart (for example, customize the header and footer or style the legend).

6. Save your circle plot chart.

Creating Treemap Charts

Treemap charts can be used to display large amounts of hierarchically structured data. Using a set of nested rectangles to illustrate data relationships, sections of a treemap represent branches of a tree. A treemap is shown in the following image.



Note: Treemap charts require at least one measure and one dimension, to be placed in the Size and Color buckets. Groups are determined by those fields specified in the Grouping bucket.

The following content display options are available for a treemap:

- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a treemap:

- **Group.** Enables you to specify dimension fields by which to present your data in nested categories or groups.
- **Size.** Use a measure field to determine the size of boxes in the treemap.
- **Color.** If a dimension field is used, creates boxes to contain values for the field in the Group bucket. If a measure field is used, applies a color scale to the boxes in the treemap.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Treemap Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a treemap chart.

4. Add one measure, one dimension to the chart. Also, add a field into the Size and Color buckets.

   The treemap chart refreshes with your selections.

5. You can perform the following tasks with your treemap chart:

   a. Add additional measures or dimensions to the chart, where applicable.

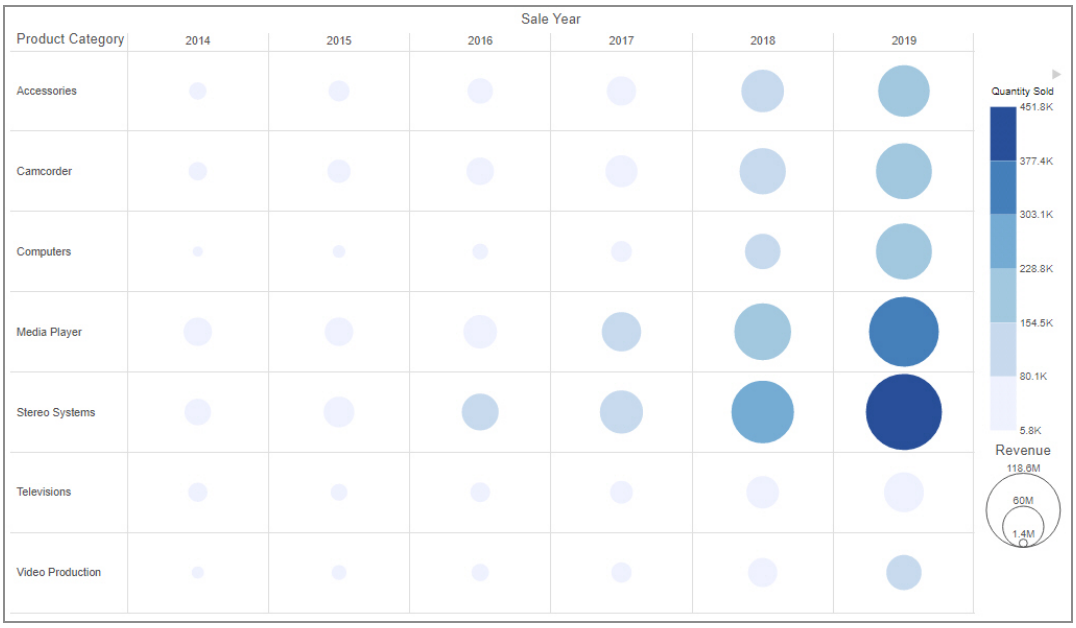
   b. Change the fields to obtain different information.

   c. Format the chart (for example, customize the header and footer or style the legend).

6. Save your treemap chart.

Creating Matrix Marker Charts

Matrix marker charts can be used to analyze one or two measures against a crosstab of two categorical dimensions. The result is a color-scaled matrix chart that shows categorized trends, as shown in the following image.



Note: Matrix marker charts require at least two measures and two dimensions. It also requires a field in the Color and Size buckets, which allow you to see the concentration of data for that intersection of the chart.

The following display options are available for a matrix marker chart:

- **Change chart orientation.** Switches the vertical and horizontal axes.
- Chart layout options:
  - **Circle marker.** Uses circles as the markers. You can choose a different marker shape from the Format tab. On the Format tab, open the Quick Access menu and click **Series**. In the Shape section, select a shape from the dropdown menu.
  - **Square marker.** Uses squares as the markers. You can choose a different marker shape from the Format tab. On the Format tab, open the Quick Access menu and click **Series**. In the Shape section, select a shape from the dropdown menu.
  - **Fill marker.** The markers fill the grid, changing the chart into a heatmap. Instead of using the Size bucket, use the Color bucket to indicate measure values.
- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.

    - **Counts.** Provides a count of records in the selected measure field, for each sort value.
    - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a matrix marker chart:

- **Vertical.** Add a dimension field to the Vertical bucket to set the vertical axis values for the matrix marker chart. Additional dimension fields are nested.
- **Horizontal.** Add a dimension field to the Horizontal bucket to set the horizontal axis values for the matrix marker chart. Additional dimension fields are nested.
- **Size.** Controls the size of each marker based on a measure value. Is not applied to matrix marker charts using the fill marker, or heatmap, display.
- **Color.** Use a measure field to apply a color scale to the markers.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Matrix Marker Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

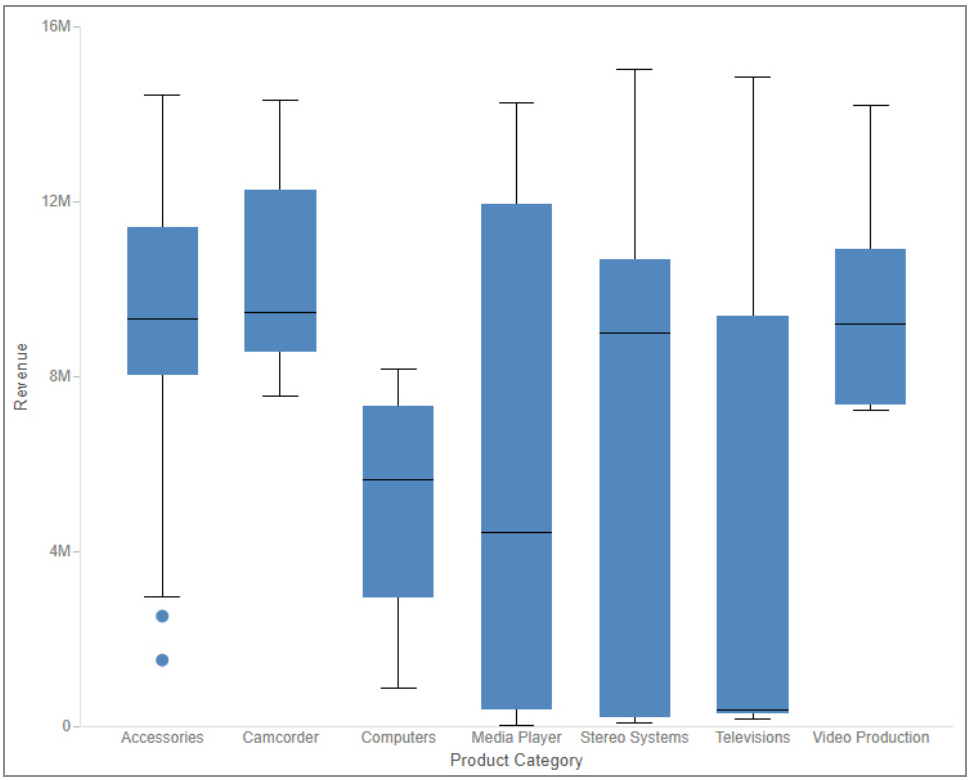
3. On the Content picker, change the chart to a matrix marker chart.
4. Add two measures and two dimensions to the chart. Also, add fields to the Color and Size buckets.

   The matrix marker chart refreshes with your selections.

5. You can perform the following tasks with your matrix marker chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your matrix marker chart.

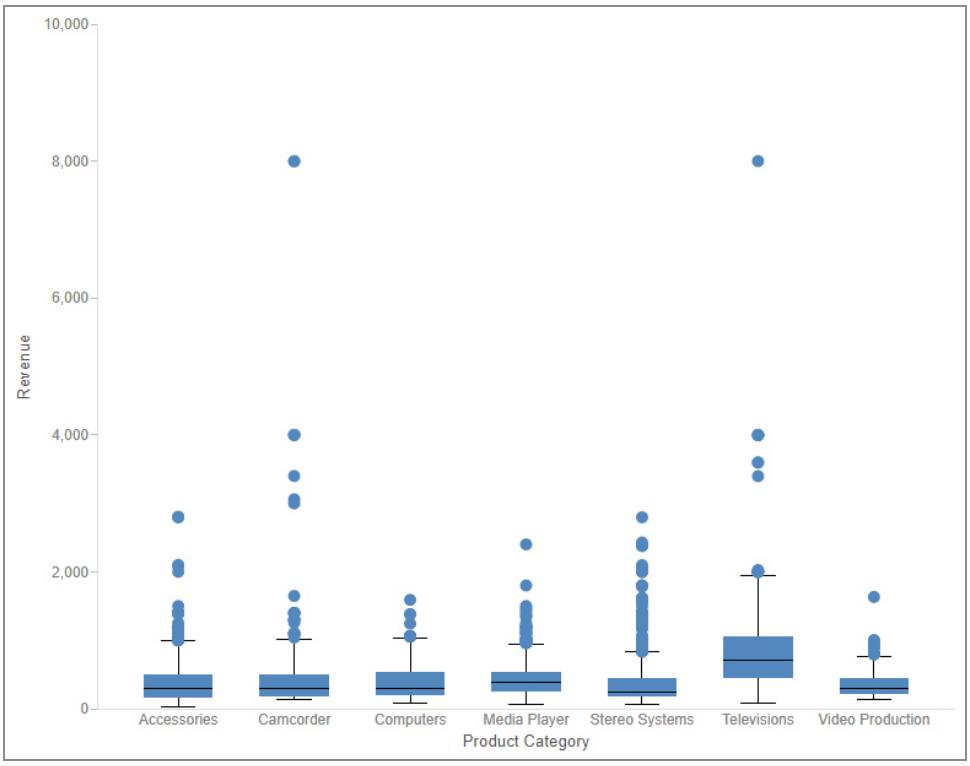
Creating Statistical Box Plot Charts

A box plot, also known as a box-and-whisker plot, is a chart type that provides distribution information about your data. The box represents the range between the upper and lower quartiles, and the line inside the box represents the median. The whiskers represent the maximum and minimum with outliers excluded, and outliers are represented by individual points. An example of a box plot is shown in the following image.



Since box plots display the distribution of points in your data, you need to provide detail values. You can do this in one of two ways. One option is to add a dimension field to the Detail bucket. This field should have a large number of distinct values to generate a sufficient spread of data for the box plot. For example, in the image above, a separate box plot is created for each Product Category to show the distribution of values in the Model field, which has been placed in the Detail bucket.

Another option is to incorporate your entire data set into the box plot. You can do this by changing the calculation method from Summaries to Details. In this case, you do not need a field in the Detail bucket to generate the box plot. The following image shows a box plot chart in which separate box plots are still generated for each product category, but which uses the Details calculation option instead of using Model as the Detail field. Since more data values are used in this chart, there are more outliers.



The following display options are available for a box plot:

- **Change chart orientation.** Switches the vertical and horizontal axes.
- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default. Add a dimension field to the Detail bucket to create a box plot when using the Summaries option.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value. Add a dimension field to the Detail bucket to create a box plot when using the Counts option.
  - **Details.** Displays the value of each individual record. You do not need to add a field to the Detail bucket when using the Details calculation option.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a box plot chart:

- **Vertical.** A measure field whose values constitute the set of data for the box plot. The outliers, maximum, minimum, median, and upper and lower quartile are calculated for these values.

- **Horizontal.** Add a dimension field to the Horizontal bucket to generate a separate box plot for each value, allowing you to compare the distribution of each.
- **Detail.** When using the Summaries or Counts calculation options, use the Detail bucket to provide individual values for the measure field in the Vertical bucket. The Detail bucket should provide multiple values for each value of the field in the Horizontal bucket.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Box Plot Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a statistical box plot.
4. Add a measure to the Vertical bucket and a dimension to the Horizontal bucket.

   A single measure value displays as a line in each column.

5. Use one of the following methods to generate a set of data for each column:

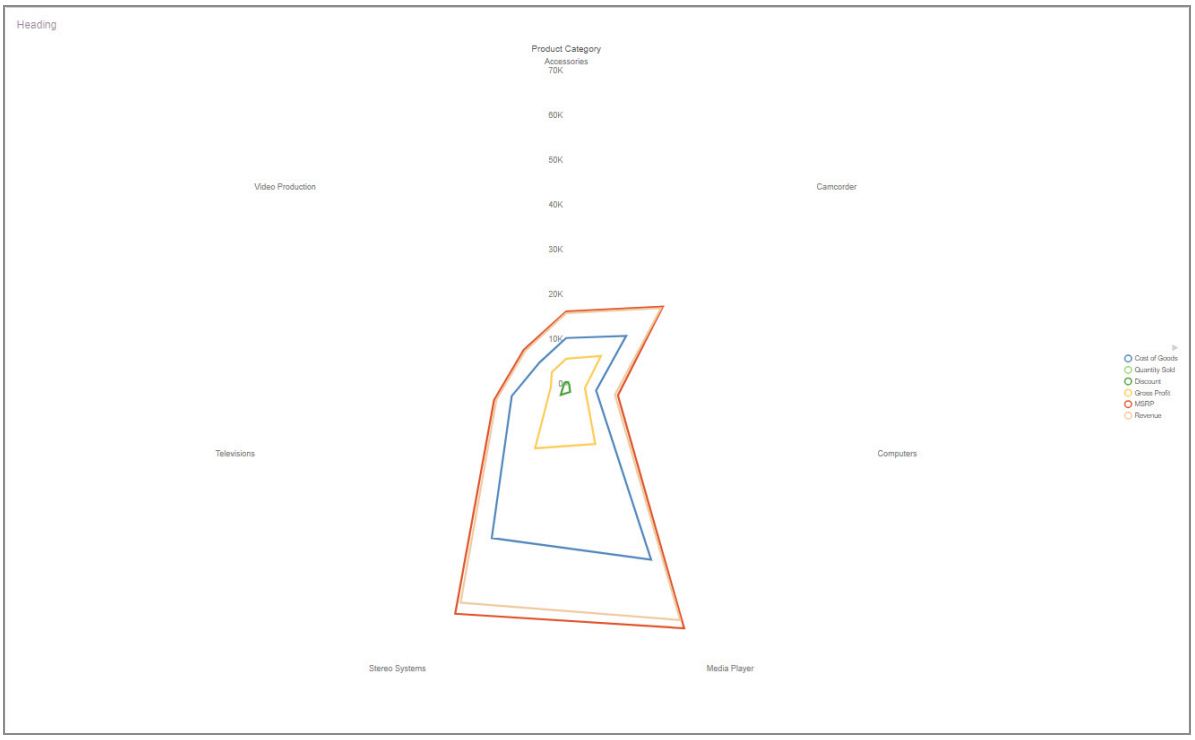
- Add a dimension field to the Detail bucket. This field should provide multiple records for Horizontal bucket value.
- Change the calculation option from Summaries to Details . If you have a very large data source, this may generate too many records to evaluate in the box plot.

A set of box plots appears on the canvas, showing indicators for outliers, maximum and minimum, median, and upper and lower quartiles.

6. You can perform the following tasks with your box plot chart:
   a. Add additional measures or dimensions to the Tooltip, Animate, and MultiPage buckets, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer, change the series colors, or set box plot-specific properties).
7. Save your box plot chart.

Creating Radar Charts

A radar chart is a type of data visualization that displays multivariate data in a two-dimensional plane. It consists of a central point with multiple axes radiating outward, each representing a different variable. The values for each variable are plotted on these axes and connected by lines to form a polygonal shape. An example of a radar chart is shown in the following image.



The following display options are available for a radar chart:

- **Change chart orientation**: Used to change the orientation of the chart.
- **Radar chart type**:
  - **Line**: Plot a line radar chart.
  - **Area**: Plot an area radar chart.
- Calculation options:
  - **Summaries**: Sums measure values for each sort value. This is the default.
  - **Counts**: Provides a count of records in the selected measure field, for each sort value.
  - **Details**: Displays the value of each individual record.
- **Clear buckets content**: Empties all buckets.

You can add fields to the following buckets for a radar chart:

- **Vertical**: A measure field whose values constitute the set of data for the radar chart.
- **Horizontal**: Add a dimension field to the horizontal bucket to generate a radar chart for each value, allowing you to compare the distribution of each.

- **Size**: Controls the size of each marker based on a measure value.
- **Color**: Use a measure field to apply a color scale to the markers.
- **Tooltip**: The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate**: Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage**: Enables the creation of multiple graphs based on the field that you place in this bucket. The **MultiPage** bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the **MultiPage** bucket disappears.

Create a Radar Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available on that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, select **Radar(Chart)**.
4. Add one or more measures and dimensions to the chart.

   The radar chart refreshes with your selections.

5. You can perform the following tasks with your radar chart:
   a. Add more measures or dimensions to the chart, wherever applicable.
   b. Change the fields to obtain different information.

c. Format the chart (for example, customize the header and footer or style the legend).

6. Save your radar chart.

Creating Data Grids

A data grid is a kind of chart that can be used to present data in tabular form. For example, you can create a grid (table) that summarizes your data. Data grids include sorting and tooltip features by default, unlike tabular reports. An example of a data grid is shown in the following image.

	Sale Quarter	1		2		3		4	
Product Category	Sale Year	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue
Accessories	2014	3,028	$744,930.42	3,103	$764,754.44	3,097	$825,606.72	3,968	$956,740.30
	2015	4,603	$1,138,922.67	4,773	$1,181,883.87	5,196	$1,297,056.97	6,054	$1,502,258.19
	2016	8,423	$2,138,504.92	7,473	$1,862,380.05	7,796	$1,945,292.99	9,192	$2,343,058.27
	2017	11,617	$2,960,774.08	10,992	$2,789,195.45	11,534	$2,898,411.06	14,553	$3,595,589.15
	2018	28,986	$7,320,410.85	26,844	$6,839,186.33	27,421	$6,973,473.26	33,164	$8,472,187.00
	2019	44,150	$11,247,102.74	40,978	$10,417,816.74	40,777	$10,338,632.79	53,182	$13,440,167.26
Camcorder	2014	2,577	$824,496.92	2,607	$827,550.35	2,896	$1,078,819.79	3,673	$1,197,050.11
	2015	4,125	$1,504,323.51	4,224	$1,368,773.84	4,810	$1,669,034.52	5,565	$1,840,136.47
	2016	7,245	$2,424,537.93	7,035	$2,362,778.07	6,962	$2,352,484.83	7,994	$2,703,299.86
	2017	10,208	$3,591,283.52	9,808	$3,374,989.46	10,432	$3,481,229.19	12,739	$4,356,820.06
	2018	25,511	$8,783,112.69	23,927	$8,238,442.56	24,103	$8,245,433.79	29,341	$10,063,548.64
	2019	39,393	$13,312,909.74	36,666	$12,538,035.14	36,774	$12,426,734.63	47,036	$15,653,012.81
Computers	2014	880	$199,174.40	805	$186,062.11	1,089	$232,199.36	1,617	$327,443.33
	2015	1,776	$355,634.16	1,767	$359,051.59	2,150	$439,404.85	2,421	$490,769.35
	2016	3,228	$655,346.96	2,967	$607,796.72	3,250	$686,144.06	4,561	$998,840.56
	2017	6,340	$1,441,530.34	5,898	$1,341,050.78	6,459	$1,468,170.73	7,796	$1,775,092.06
	2018	15,834	$3,599,921.91	16,299	$4,123,475.47	19,302	$5,651,484.49	23,171	$6,716,582.29
	2019	36,755	$11,692,593.66	41,079	$13,041,225.28	41,213	$13,465,169.21	42,408	$15,805,232.13

Note: Data grids require at least one measure and one dimension. Additional measures create unique columns. You can add multiple dimensions in the Row bucket to create customized rows based on the structure of your selection, and add dimensions to the Column bucket to create groups of measure columns based on dimension values.

The following display options are available for a data grid:

- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.

    - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a data grid:

- **Measure.** Supplies the measure values to display in the cells of the data grid.
- **Row.** Use a dimension field to define the rows in the data grid, similar to the BY field in a report.
- **Column.** Use a dimension to provide an additional sort column for each value. Each measure column is nested within each column field value. The column bucket is similar to an ACROSS field in a report.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Data Grid

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.
3. On the Content picker, select **Data Grid (Chart)**.
4. Add one or more measures and dimensions to the chart.

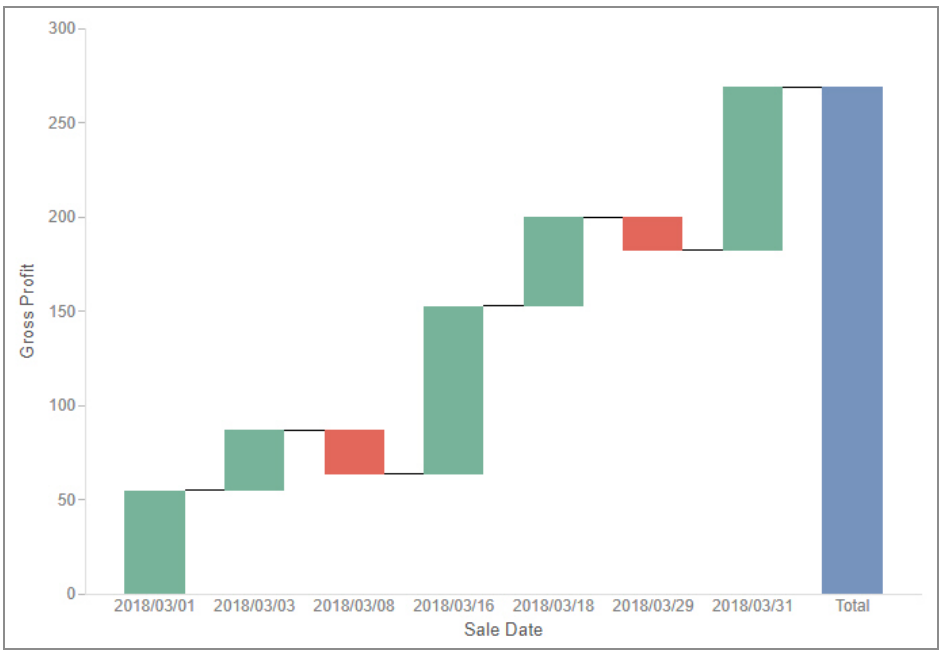
   The data grid refreshes with your selections.
5. You can perform the following tasks with your data grid:
    a. Add additional measures or dimensions to the chart, where applicable.
    b. Change the fields to obtain different information.
    c. Format the chart (for example, customize the header and footer or style the

legend).

6. Save your data grid.

Creating Waterfall Charts

Waterfall charts allow you to see incremental positive and negative changes in your data, resulting in a rolling total. Positive and negative values are represented by different colored risers that start at the end point of the previous riser. Waterfall charts can be a good way to show change over time. An example of a waterfall chart is shown in the following image.



The following display options are available for a waterfall chart:

- **Change chart orientation.** Switches the vertical and horizontal axes so that the risers draw horizontally.
- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a waterfall chart:

- **Vertical.** Specifies the measure field used in the chart to set the riser height. Negative values of this field display in red by default.
- **Horizontal.** A sort field whose values are represented by each riser.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Waterfall Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a waterfall chart.

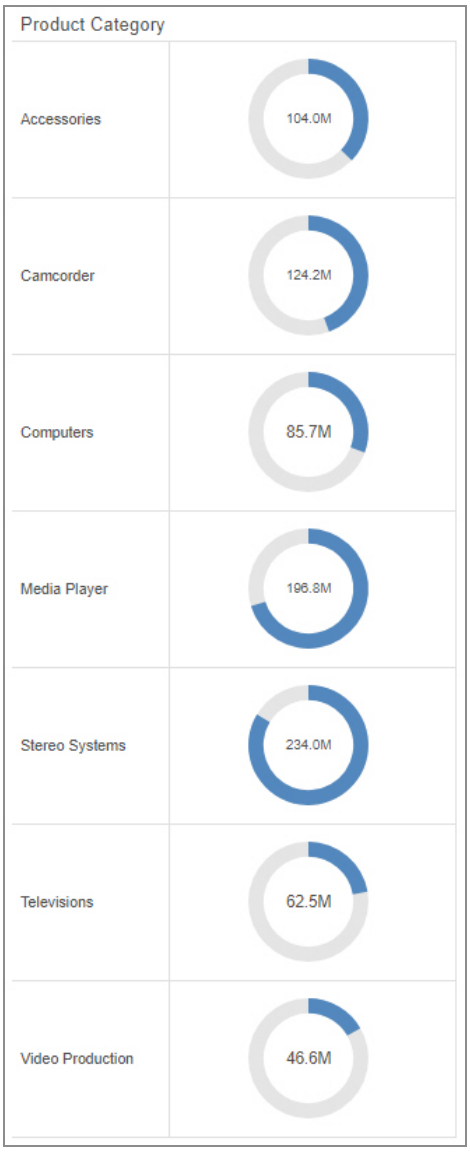
4. Add one measure to the Vertical bucket, and one dimension to the Horizontal bucket.

   The waterfall chart refreshes with your selections. Any positive values display in green, and any negative values display in red, by default. There is also a Total column, which displays in blue by default.

5. You can perform the following tasks with your waterfall chart:
    a. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.
    b. Change the fields to obtain different information.
    c. Format the chart (for example, customize the header and footer or add data labels).
6. Save your waterfall chart.

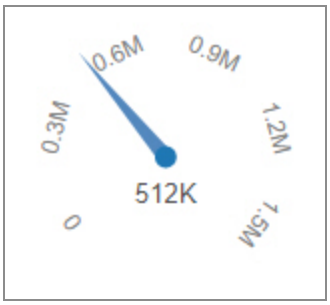
Creating Gauge Charts

A gauge is a simple visual that shows a measure value. These can be used to create straightforward KPI graphics, or use matrix rows and columns to compare data for different sort values. The following example shows a gauge chart with matrix rows.

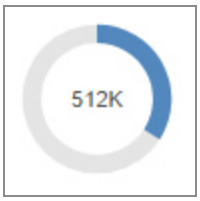


The following display options are available for a gauge chart:

- **Change chart orientation.** Switches the vertical and horizontal matrix axes.
- Chart layout options:
    - **Circular.** Shows the measure value using a pointer with values arranged in a semicircle starting at the bottom left, similar to a speedometer. A circular gauge is shown in the following image.



  - **Simple.** The default value, shows the measure value as a clockwise, colored fill on a circle starting at the top. The value is also displayed as text inside the circle. A simple gauge is shown in the following image.



  - **KPI.** Shows the measure value as text. A KPI gauge is shown in the following image.

- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a gauge chart:

- **Vertical.** A dimension field used to generate matrix rows.
- **Horizontal.** A dimension field used to generate matrix columns.
- **Measure.** The measure field whose value is represented by the gauge.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart. The KPI style gauge does not show a tooltip.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Gauge Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a gauge chart.
4. Choose a gauge type from the display options. Simple, Circular, and KPI gauge types are available.
5. Add one measure to the Measure bucket.

   The gauge loads to display the value of the measure field.

6. You can make the following additional customizations to your gauge chart:

   a. Create a matrix chart by adding dimension fields to the Vertical and Horizontal buckets.

   b. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.

   c. Change the fields to obtain different information.

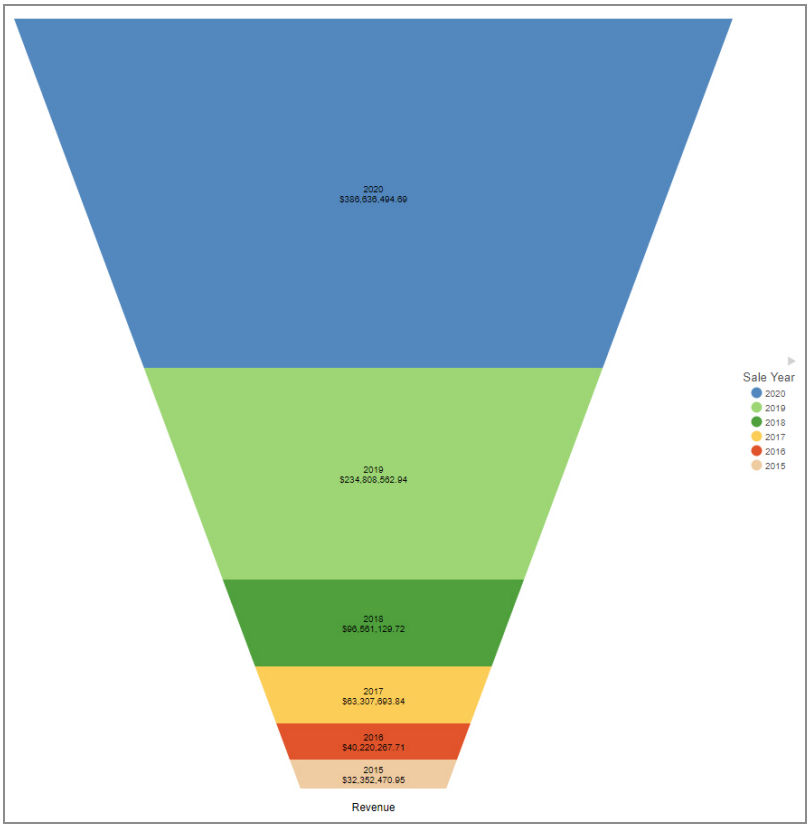
   d. Format the chart (for example, customize the header and footer or change the

series color).

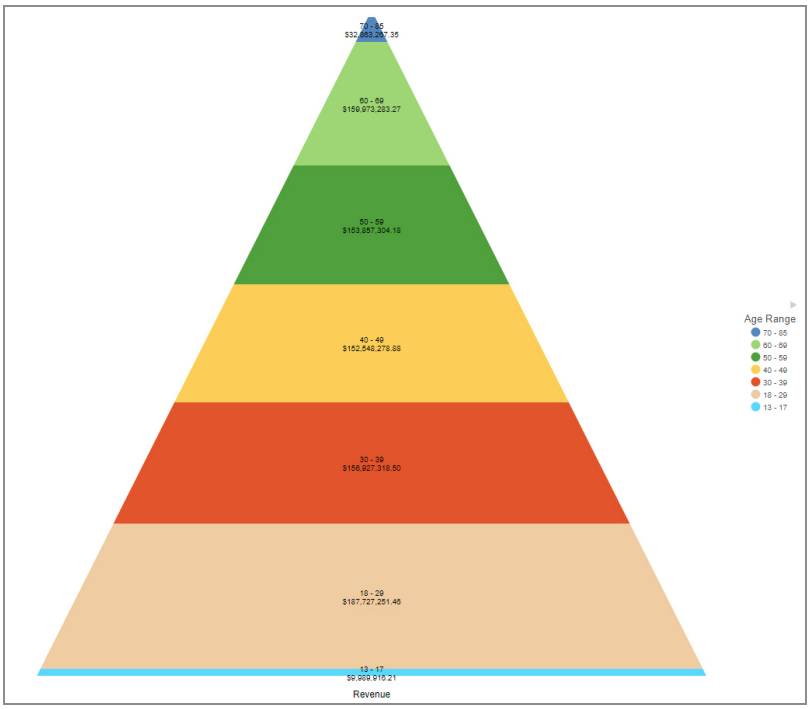
7. Save your gauge chart.

Creating Funnel Charts

A funnel chart shows values of a dimension field as a proportion of the whole, similar to a bar in a stacked bar chart. The shape of the funnel makes it useful to show information about processes that involve cascading or narrowing down due to the hierarchy it implies. For example, the following image shows revenue by year in a funnel chart. The entire funnel can be taken to represent all sales, with the top segment representing the most recent year, the top two segments the two most recent years, and so on.



Conversely, you can use the pyramid option to show values in an implied hierarchy, as shown in the following image of a pyramid chart showing revenue by age range. The oldest range, 70-85 is at the top, and the youngest range, 13-17, is at the bottom.



The following display options are available for a funnel chart:

- Chart layout options:
  - **Funnel.** The default value, arranges the chart in a funnel shape, wide at the top and narrow at the bottom.
  - **Pyramid.** Arranges the chart in a triangle, wide at the bottom with a point at the top.
- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a funnel chart:

- **Measure.** The measure field whose values are represented by each layer of the funnel chart.
- **Color.** A dimension field that determines the layers of the funnel chart.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Funnel Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a funnel chart.
4. Add at least one measure to the Measure bucket and a dimension to the Color bucket.

   The funnel chart loads, showing each dimension field as a layer with height based on the value of the measure field.

5. You can make the following additional customizations to your funnel chart:

   a. Change the funnel chart to a pyramid chart.

   b. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.

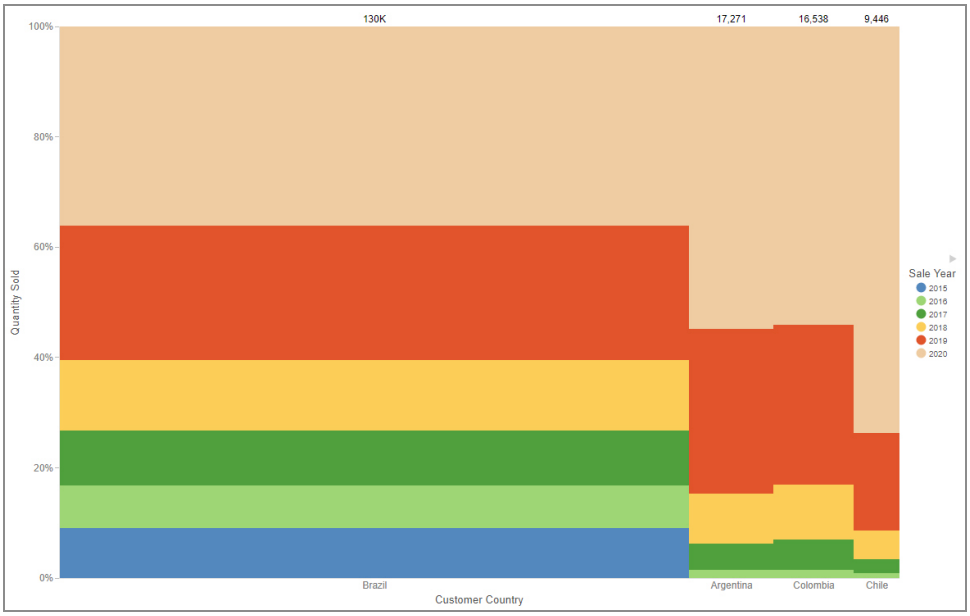
c. Change the fields to obtain different information.

d. Format the chart (for example, customize the header and footer or change the series color).

6. Save your funnel chart.

Creating Mekko Charts

A Mekko chart allows you to see proportional values of a measure field for two dimension fields. The intersections of these dimension fields and their relative sizes make it possible to quickly identify the most significant combinations of values. An example of a Mekko chart is shown in the following image.



The following display options are available for a Mekko chart:

- Calculation options:
  - **Summaries.** Sums measure values for each sort value. This is the default.
  - **Counts.** Provides a count of records in the selected measure field, for each sort value.
  - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a Mekko chart:

- **Vertical.** The measure field whose values are represented by the proportional width of each column and height of each color segment.
- **Horizontal.** A dimension field to break the Mekko chart into columns. The width of each column is based on the measure field in the Vertical bucket, and represents that column's share of the total.
- **Color.** A dimension field that determines the segments of the columns in the Mekko chart. The area of each segment represents its share of the total.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Mekko Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a Mekko chart.
4. Add one measure to the Vertical bucket and a dimension to the Horizontal and Color buckets.

The Mekko chart loads to display the proportional value of the measure field for each segment in each column.

5. You can make the following additional customizations to your Mekko chart:
    a. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.
    b. Change the fields to obtain different information.
    c. Format the chart (for example, customize the header and footer or change the series color).
6. Save your Mekko chart.

Creating Tag Clouds

A tag cloud allows you to see the most frequent or largest values in a dimension field based on the size and color of the text, making it easy to identify the most important values. An example of a tag cloud is shown in the following image.

The following display options are available for a tag cloud:

- Calculation options:
    - **Summaries.** Sums measure values for each sort value. This is the default.
    - **Counts.** Provides a count of records in the selected measure field, for each sort value.
    - **Details.** Displays the value of each individual record.

- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a tag cloud:

- **Detail.** The dimension field whose values are displayed as text in the tag cloud.
- **Size.** A measure value that determines the font size of each value.
- **Color.** A measure value to set a color scale for the tag cloud text.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Tag Cloud

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

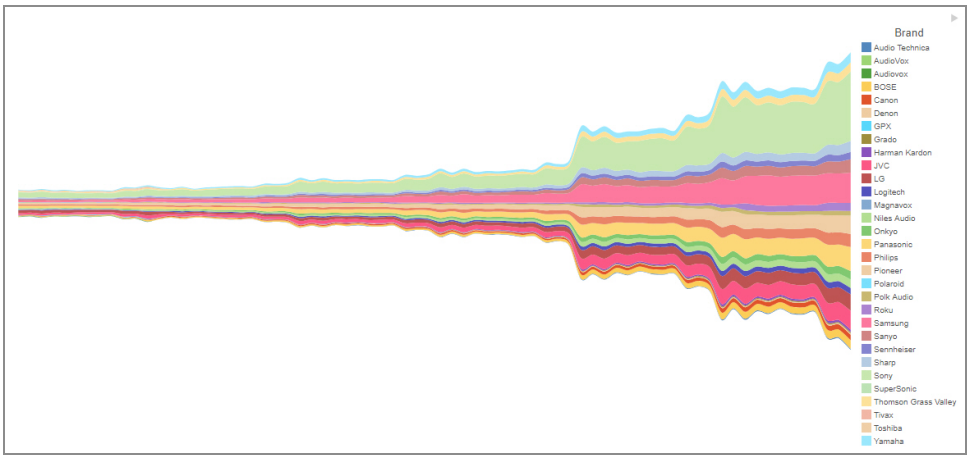
3. On the Content picker, change the chart to a tag cloud.
4. Add a dimension field to the Detail bucket and a measure field to the Size bucket. Optionally, add a measure field to the Color bucket.

The tag cloud loads, showing each value of the Detail field with a font size determined by the Size field.

5. You can make the following additional customizations to your tag cloud:
    a. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.
    b. Change the fields to obtain different information.
    c. Format the chart (for example, customize the header and footer).
6. Save your tag cloud.

Creating Streamgraphs

A streamgraph is a simplified area chart. It does not show labels for measure values, but makes it easy to identify trends for different dimension values over time. An example of a streamgraph is shown in the following image.



The following display options are available for a streamgraph:

- Calculation options:
    - **Summaries.** Sums measure values for each sort value. This is the default.
    - **Counts.** Provides a count of records in the selected measure field, for each sort value.
    - **Details.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a streamgraph:

- **Vertical.** The measure field that determines the height of each area.
- **Horizontal.** A dimension field to create a horizontal axis for the streamgraph. Typically, this is a date or date-time field.
- **Color.** A dimension field to generate different areas in the streamgraph.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Create a Streamgraph

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a streamgraph.

4. Add a measure field to the Vertical bucket, a dimension, such as a date field, to the Horizontal bucket, and another dimension to the Color bucket.

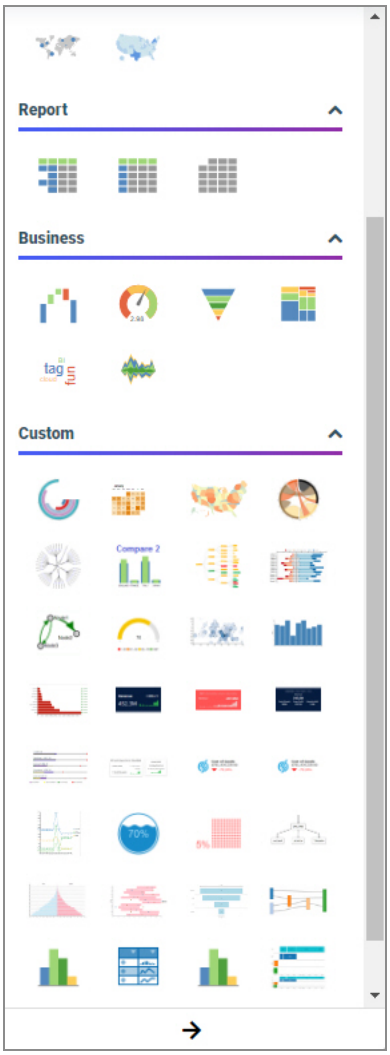
   The streamgraph loads, showing comparative changes for each value in the Color

bucket.

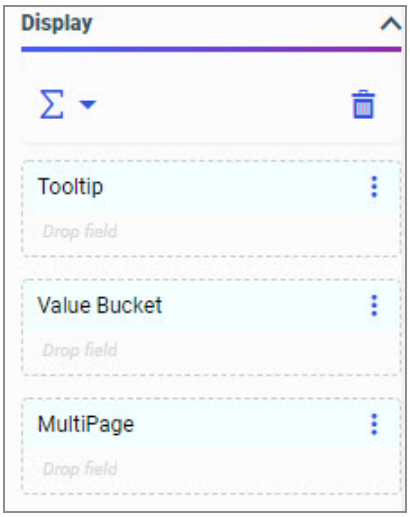
5. You can make the following additional customizations to your streamgraph:
    a. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.
    b. Change the fields to obtain different information.
    c. Format the chart (for example, customize the header and footer or change series colors).
6. Save your streamgraph.

Creating Charts Using a Chart Extension

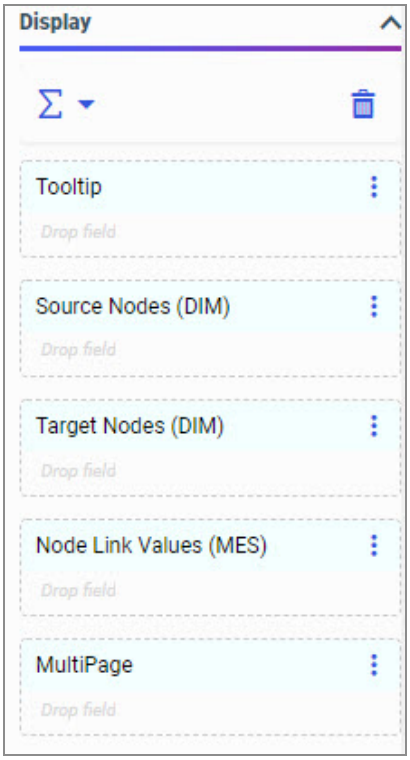
WebFOCUS supports the ability to add new, custom chart types to its list of built-in charts. These custom chart types are called extensions or plug-ins. Once enabled on your WebFOCUS environment, any extensions that you have added are available when you expand the Content picker, in the Custom section, as shown in the following image.



Each chart extension uses a set of buckets and properties unique to that extension. The liquid gauge chart extension uses the Tooltip, Value Bucket, and MultiPage buckets, as shown in the following image.



The chord diagram, on the other hand, uses the Tooltip, Source Nodes, Target Nodes, Node Link Values, and MultiPage buckets. It also indicates the type of field that should be used in each bucket, as shown in the following image.

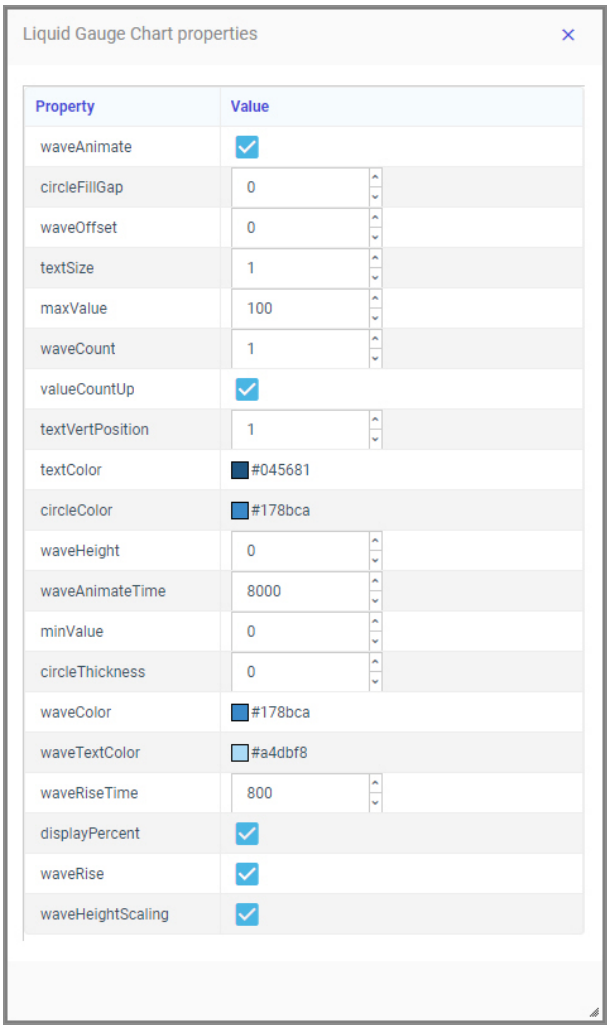


Each of these buckets is configured to allow a certain number of fields, and certain types of fields.

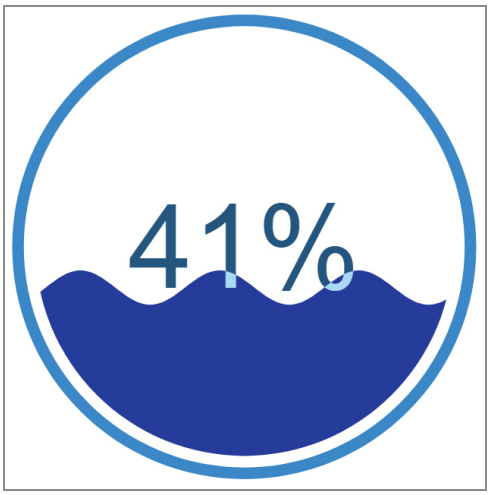
Chart extensions also have a unique set of properties that can be applied to them. To access chart extension properties, on the Format tab, with the General option selected from the Quick Access menu, in the Other section, click **Extension properties**. This opens

the Extension properties panel. The Extension properties panel opens on top of the Resources and Properties panels, and can be resized and moved within the browser window. If you click outside of the Extension properties panel, it closes, and any changes that you made to the chart properties are applied.

The Extension properties panel for a liquid gauge chart is shown in the following image.



Some of the properties on the Extension properties panel apply to specific elements of the chart extension. For example, in the following image, the color of the wave in the liquid gauge chart has been changed to a darker shade of blue, and the number of waves has been increased from 1 to 3.



For more details about the buckets and properties used in specific chart extensions, see the page for each extension on the GitHub site.

Create a Chart Using a Chart Extension

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Expand the Content picker and, from the Custom section, select a chart extension with which to create your chart.

4. Add measure and dimension fields to the chart based on the available buckets.

5. Optionally, style the chart using the available extension-specific properties.

   a. On the Properties panel, select the **Format** tab.

   b. If it is not already selected, open the Quick Access menu and select **General**.

   c. In the Other section, click **Extension properties**. The extension properties panel opens.

d. Make changes to the desired properties, and then close the extension properties panel.

   The chart updates to reflect your changes to extension properties.

6. Save your visualization.

Note: Field Length Specifications:

- Name: Maximum 65 characters.
- Summary: Maximum 2048 characters.

Displaying Measure Values in Charts

In most chart types, measure values for different categories are communicated based on visual cues. For example, the height of a riser in a bar chart, the size of a slice in a pie chart, or the color or an area of a heatmap all communicate the measure value of the dimension value that they represent. By comparing different areas of the chart, and by using the legend and tooltips, you can quickly identify overall trends in your data.

To display measure values in a chart, you add them to a measure bucket. The names of these buckets differ, depending on the type of chart, and many chart types include multiple measure buckets, so you can evaluate the relationships between different metrics. For example, in a bar chart, you can display measure values using the Vertical, Size, and Color buckets. The Vertical bucket expresses values of the selected measure field using the height of each bar, the Size bucket expresses values using the width of each bar, and the Color bucket expresses values using the color of each bar, based on a color scale. The Color bucket can accept either a measure field or a dimension field. If you use a dimension instead of a measure, the color of each bar or bar segment is based on dimensional series values.

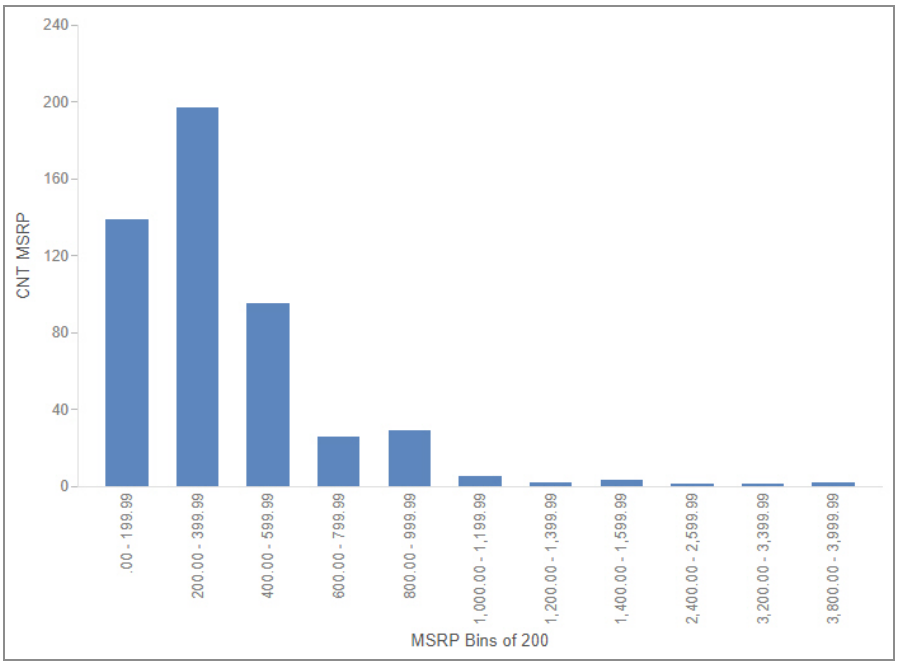
Each chart type has a default measure bucket. When you double-click a measure field or drag it onto the canvas, it is automatically added to that bucket. In the case of a bar chart, the default measure bucket is the Vertical bucket. For more information about the buckets available for each chart type, see the topics under Creating Charts.

By default, when a measure field is added to a measure bucket, the values are aggregated as a sum. The aggregation is performed for each dimensional sort value. To change the type of aggregation for a single field from sum to another option, such as count or average, right-click the measure field and point to **Aggregate**. A list of available aggregation options

displays. For more information about aggregations, see Using Prefix Operator Aggregation Functions.

Alternatively, you can change the evaluation of all measure fields in your chart at once. From the Calculation Options menu Σ ▾, you can change the evaluation in all measure buckets from a summary aggregation to a count aggregation or to detail values, in which case the measure values are not aggregated at all, instead displaying the value of each record in your data set. When you select one of these options, the icon displays above the chart buckets.

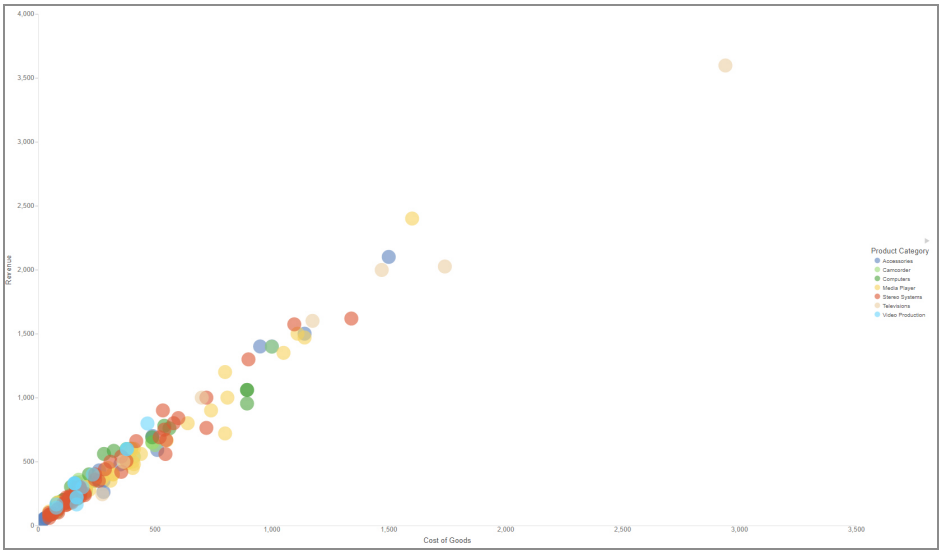
The count evaluation method displays the number of records within each sort value. This allows you to see the distribution of your data, such as in a histogram. To create a histogram, create a bar chart and create a set of bins for the measure field distribution you want to evaluate. Add the newly created bins to the Horizontal bucket, then add the original, associated measure field to the Vertical bucket. Finally, change the evaluation method from Summaries to Counts. The chart now shows the number of records that fall into each bin range, as shown in the following image.



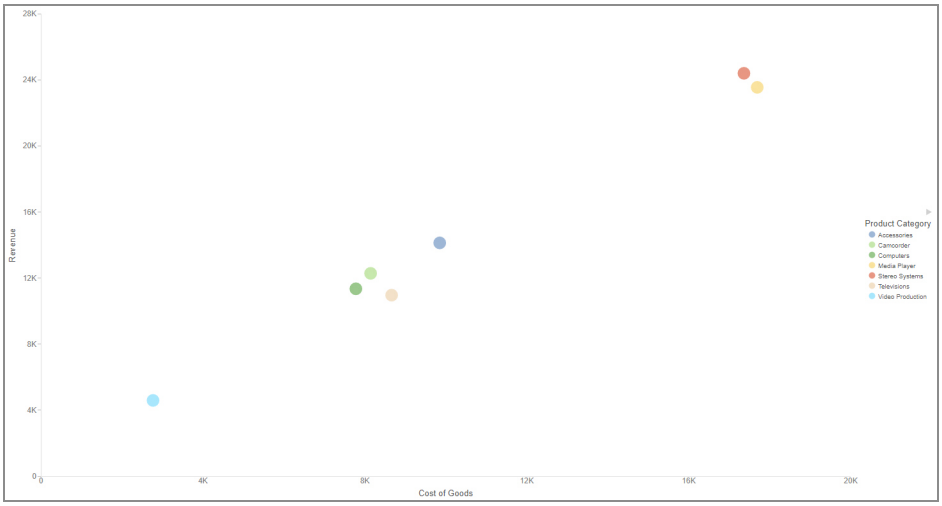
When using the Counts evaluation option, you can still change the aggregation option for each individual measure field, just like when you are using the Summaries option.

The Details evaluation option allows you to see the value of each individual record in your data set. Since every record is displayed, the Details option is best used for chart types that can display lots of values effectively. For example, the following image shows a scatter plot where each point represents a different record. The Revenue and Cost of Goods values

represented by each axis are the non-aggregated revenue and cost of goods for each individual record.



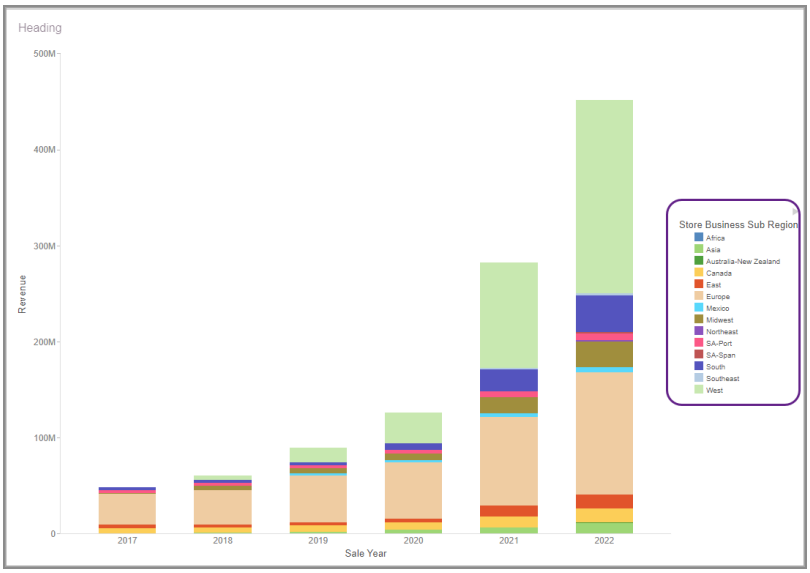
If we had used the Summaries option, the chart would have displayed one point for each sort value, as shown in the following image. In this example, the sort value was the dimension in the Color bucket, Product Category.



Note: If you are using a very large data source, you may wish to filter your chart before displaying detail values to reduce the resources required to display all records.

Sorting Legends in a Chart

With many chart types, you can use legends to quickly visualize segments of your data by color. In the following image, we have an example of the Year by Revenue stacked bar chart, with the legend showing you subregions.



As you can see, the legend is sorted alphabetically, by default. You can change this default sorting to reflect the order that better fits your data narrative. There are two ways to change the legend sorting: by borrowing your sorting order from another field or by configuring a DEFINE field to specify your exact sorting order.

Sort a Legend by Another Field

In this procedure, we sort the subregion legend by region instead of the alphabetical order.

Procedure

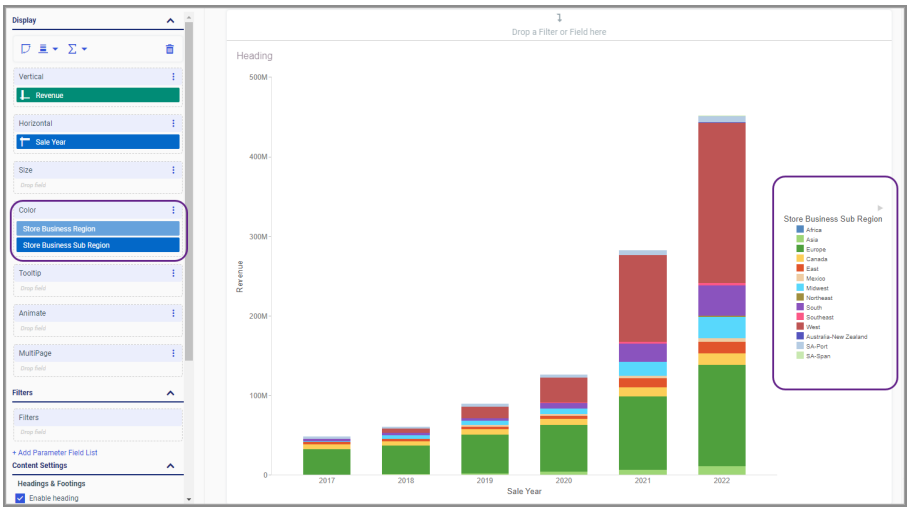
1. On the WebFOCUS Hub, click the Plus button, and then click **Create Visualizations**.
2. In the Select Data Source dialog, choose a data source and click **Create Visualizations**.

   In our example, we are working with the *wf_retail_lite* master file.
3. Select the fields for your chart.

In our example, we are adding the Sale Year field to the Horizontal bucket, and the Revenue field to the Vertical bucket to recreate the Year by Revenue stacked bar chart mentioned earlier.

4. To sort our subregion legend by region, start by dragging the Store Business Region field to the Color bucket.
5. Right-click the Store Business Region field in the Color bucket, and then click **Hide**.
6. Double-click the Store Business Sub Region field in the Resources panel.

   The field gets added to the Color bucket. Notice that the subregion legend is now sorted according to the hidden Store Business Region field, as shown in the following image.



Sort a Legend With a DEFINE Field

In this procedure, we create a DEFINE field with specific sorting parameters and use it to sort the legend.

Procedure

1. Create a basic stacked chart, as described in the previous procedure.
2. Right-click a field that you want to sort the legend for in the Resources panel, and then click **Add calculation**.

   The New Calculation dialog opens.
3. Add the following calculation syntax:

```
DECODE "Field Title" ('Value 1' 1 'Value 2' 2)
```

where:

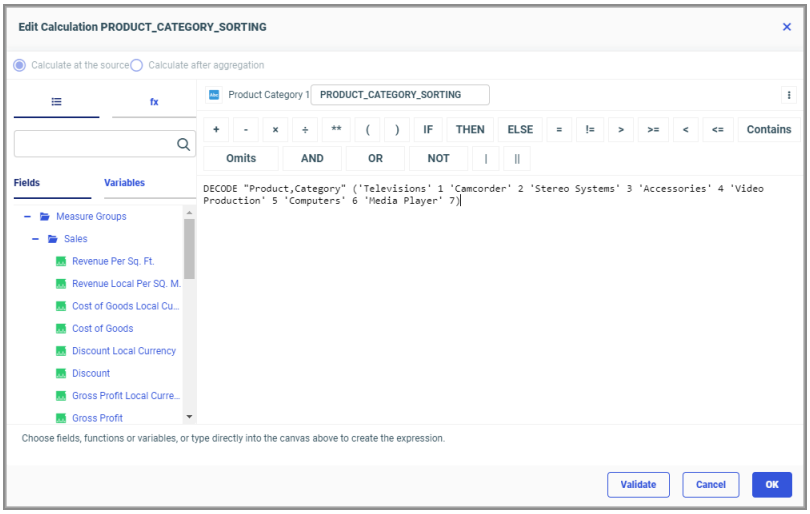
Field Title

Is the title of the field for which you want to sort the legend. Typically, the field title is already displayed when the New Calculation dialog opens.

Value 1

Is the name of the value that you are sorting. Each value, in single quotation marks, followed by a designated number, creates the sorting order for the legend.

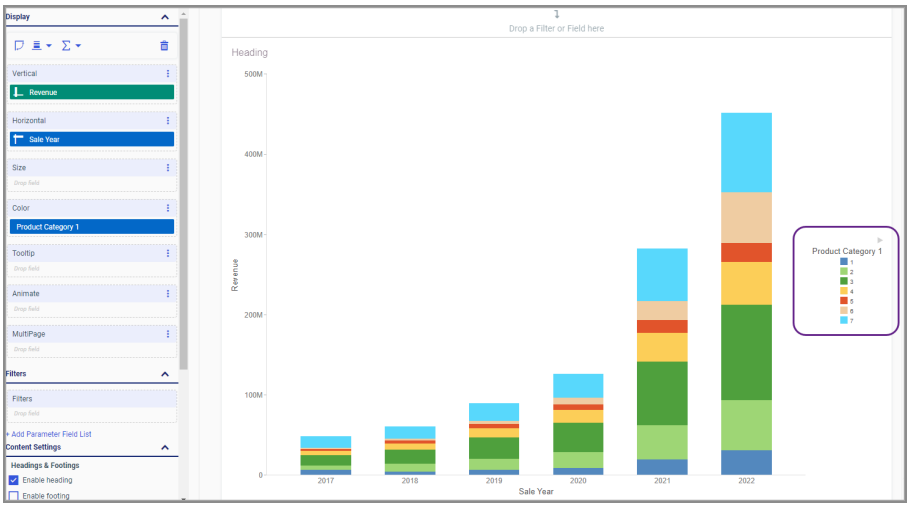
An example of the configured calculation is displayed in the following image.

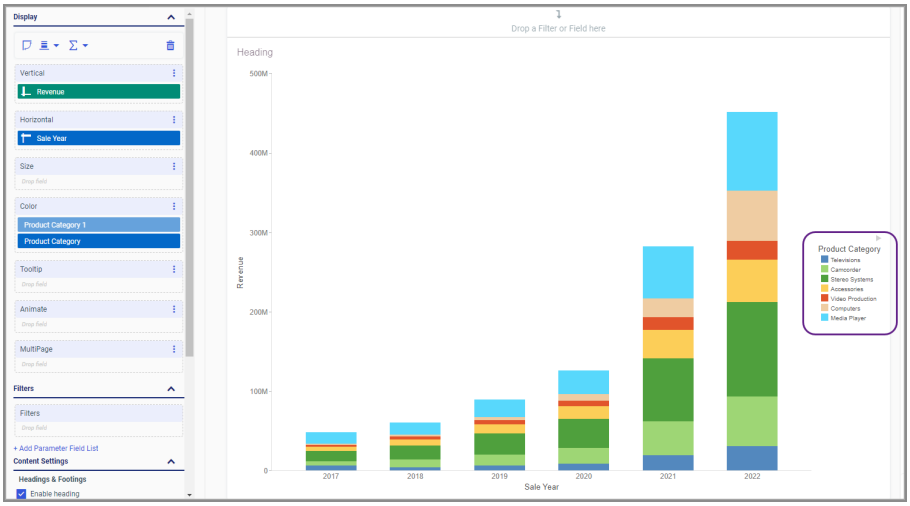


4. Click **Validate** to make sure your calculation is correct, then click **OK**.
5. Drag your newly configured DEFINE field to the Color bucket.

   Notice that the sorting order is consistent with the one we configured in our calculation, but the values are represented by sorting numbers
6. Right-click the DEFINE field in the Color bucket, and then click **Hide**.
7. Double-click the regular field in the Resources panel.

   The field gets added to the Color bucket and its legend assumes the same sorting order as the one calculated in the hidden DEFINE field, as shown in the following images.





Formatting Charts

Charts allow you to present information graphically, using such visual cues as color, size, and position to convey relationships between measures (numeric fields to be aggregated) and dimensions (categories) and to identify trends and outliers. You can create a wide variety of charts. For example, you can review your data (Gross Profit and Product Category) using different chart types (for example, bar chart, area chart, or line chart). The chart options give you an edge in deciding which chart to use to highlight certain information or trends.

Once you have created a chart, you can apply various styling and formatting changes to it. For example, bolding text in a legend or header, changing the color of a series, or changing

the appearance of axis lines. The chart formatting options allow you to specify how components display, enabling you to format your chart to suit your needs.

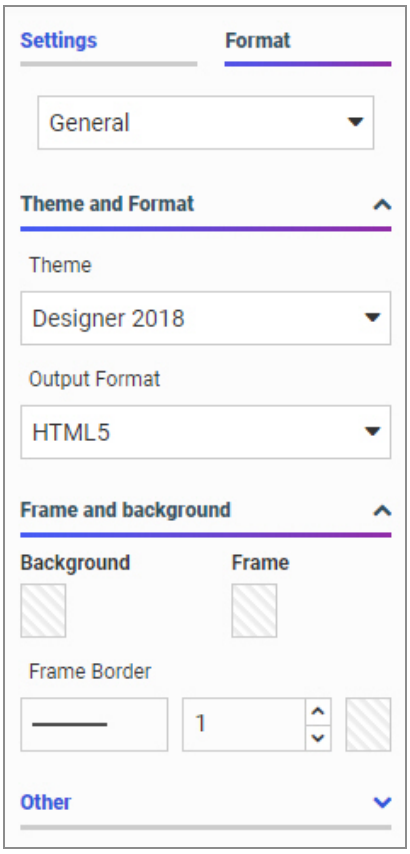
The formatting capabilities of WebFOCUS Designer let you indicate which aspects display, how fonts are utilized, and which additional options enable you to create an effective, styled chart. This allows you to control the display of your chart information, giving you every opportunity to create a chart that you can share, distribute, and reuse on pages.

Customizing Charts

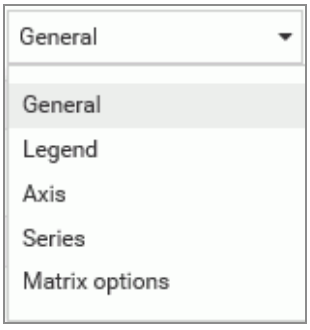
As you work with your chart, you can make modifications that improve the display of your chart, highlighting the layout and presentation of the chart components. Some of the formatting options include:

- Controlling font display
- Customizing headers and footers
- Changing the format of your legend
- Formatting the axes of your chart
- Formatting the series of your chart
- Customizing the format of your matrix chart
- Enhancing a box plot
- Enhancing your grid
- Enhancing a gauge
- Adding a theme
- Adding color to your chart

You can access the formatting options from the Format tab, as shown in the following image.

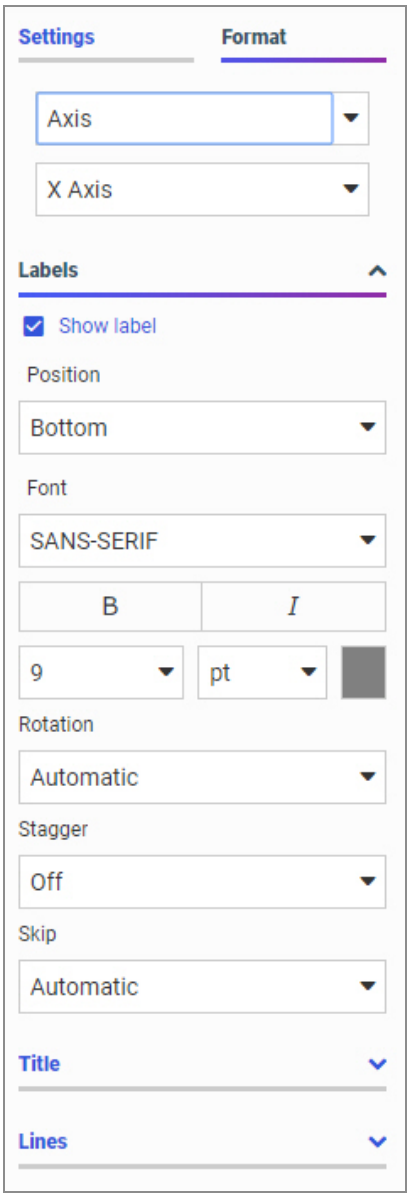


General options display, by default, but you can use the Quick Access menu to select a different aspect of your chart, for example, Legend, Axis, Series, or Matrix options, as shown in the following image.



Different options are available, depending on the chart type.

Once you select an area of your chart to modify (for example, Axis), you can use the intuitive options and menus to make selections, as shown in the following image.



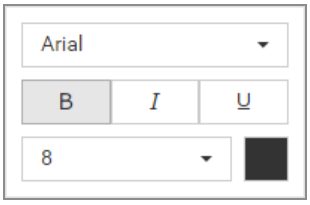
You can also access styling options by right-clicking an area of your chart, such as a riser or axis label, and clicking **Style**.

Note: If you are working with a map, reference lines, or data grids, additional tabs display, enabling you to make formatting changes to these components. These tabs do not display, by default.

By streamlining formatting options in one place, you can quickly format charts to enhance the display of your data. Whether it be color-coding a series in a chart or changing the font size of your data labels, a customized, formatted chart is just a click away.

Controlling Font Display in a Chart

You can use the font formatter in WebFOCUS Designer to control how fonts are displayed in your chart. This is a quick way to apply styling, colors, or a specific font type for any text within your chart. The font formatter displays in different areas of the Format tab (for example, Legend, Axis, Series, and Matrix options). Depending on the chart type and what you want to format, you can use these options to enhance the fonts in your charts. The font formatter is shown in the following image.



You can also change the font of a header or footer in your chart. This allows you to control how a chart is labeled or highlighted, which is useful when the chart is distributed. For headers and footers, you can:

- Change the font type and font size.
- Add bold, italic, and underline emphasis to your text.
- Set the justification of the text in your header or footer. For example, left-aligned, centered, or right-aligned.
- Change the font color or background color.

The styling toolbar for header and footer text is available along the top of the canvas, as shown in the following image.

When reviewing text that displays in your chart, you might want to increase the font size of the header text to enhance its visibility. Editing the font types and styles in your chart gives you more control over how information is displayed and presented.

Change the Font Type in Your Chart

Changing the type, size, and emphasis of a font improves the impact for the user that is analyzing this chart. To change the font of a chart header:

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

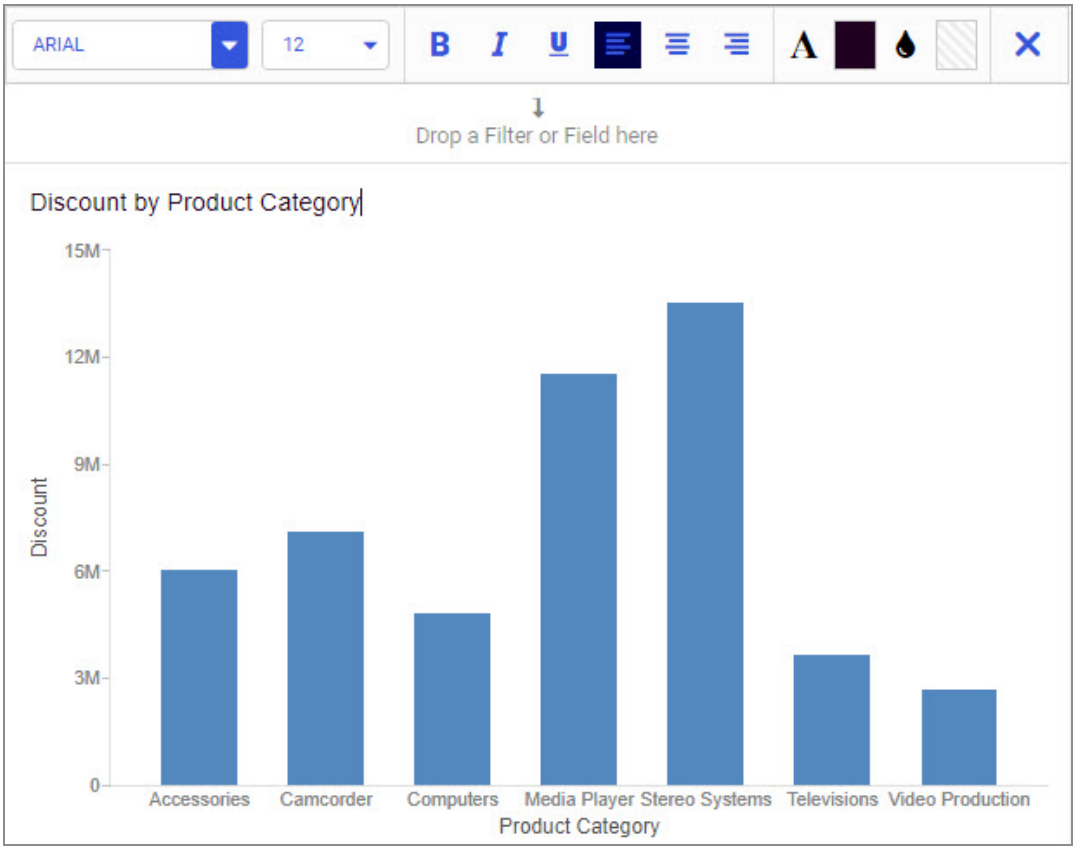
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Add one or more measures and dimensions to your chart.

4. Double-click **Chart Heading** to enable it for formatting, and change this text to *Discount by Product Category*.

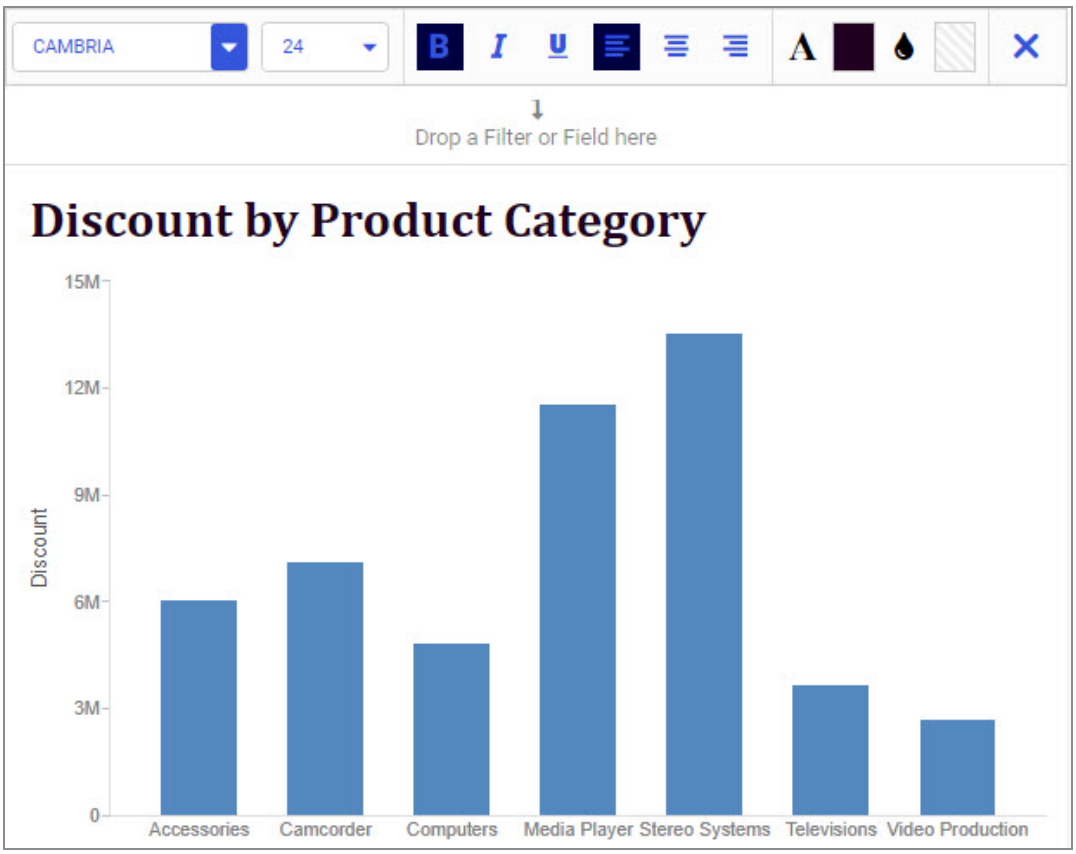
   The styling toolbar displays along the top of the screen, as shown in the following image.



5. Ensure that the header *Discount by Product Category* is selected or highlighted.

6. From the styling toolbar, change the font type to Cambria, size 24, Bold.

   The revised chart header displays and reflects the new font type and styling, as shown in the following image.



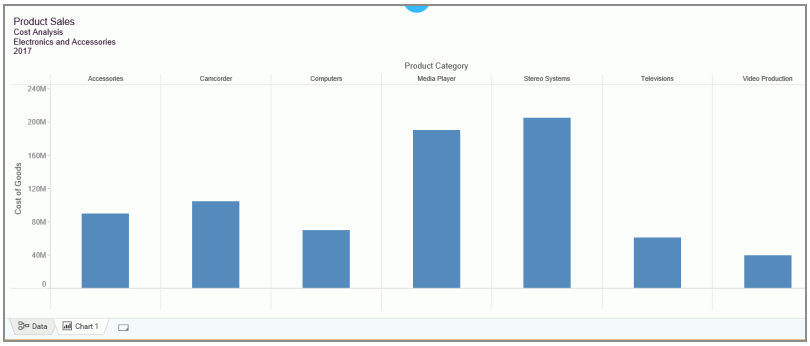
Note: You must select the text you want to modify in your header or footer before you apply any changes to the font.

Adding Headings and Footings to a Chart

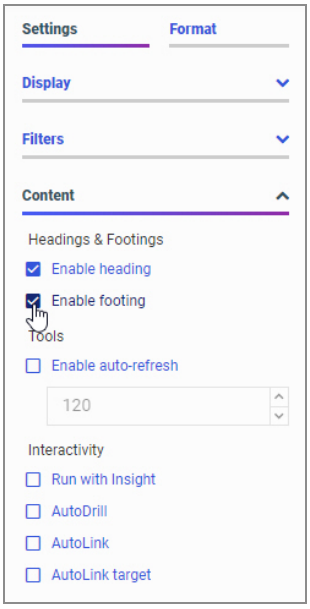
You can use headers and footers to add key information, such as the purpose of the chart and the audience. For example, if you have gross profit for different product categories, you can add a header to highlight this information in your chart.

You can add multiple lines of information into the heading and footing areas in a chart. This accommodates thorough explanations and additional information while offering the most readable presentation.

You add a new line in the heading and footing by pressing the Enter key. The number of lines of heading and footing you can add to a chart is only limited by the available real estate on the chart. The chart body adjusts to fit within the available space with the heading/footing lines inserted. You can change the font size or other presentation aspects using the editing toolbar that displays. When you are finished editing the heading and footing and the edit mode is closed, the chart canvas adjusts to ensure that all lines of the heading or footing are visible, as shown in the following image.



Headers and footers can contain the same type of information. Footers are not enabled, by default, but can be enabled from the Content area on the Settings tab, as shown in the following image.



You can make styling changes to the information in your headers and footers, which allows you to interactively style the text according to your preferences. Using a WYSIWYG canvas, it delivers formatting changes instantly, allowing you to see the results of your selections as you make them. When editing your header or footer, you can find the options at the top of the canvas, as shown in the following image.

You can change the font and font size using the dropdown lists. You can add bold, italic, and underline accents to your text. In addition, you can change the positioning of your text (left, center, and right). You can also customize the color of the text, as well as the background of the header or footer text area. When your formatting is complete, you can close the toolbar and continue working with your chart.

Note: : You can double-click the heading or footing to resume modifications at any time.

Add Headings and Footings to a Chart

You can add and style headings and footings in a chart.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

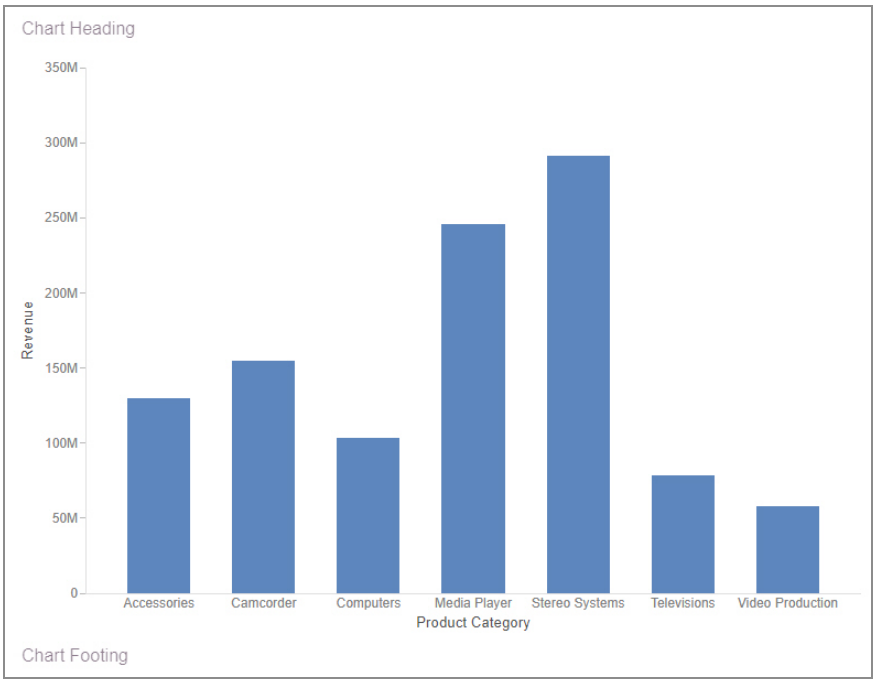
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Add one or more measures and dimensions.

4. On the Settings tab, expand the Content area and select **Enable footing**.

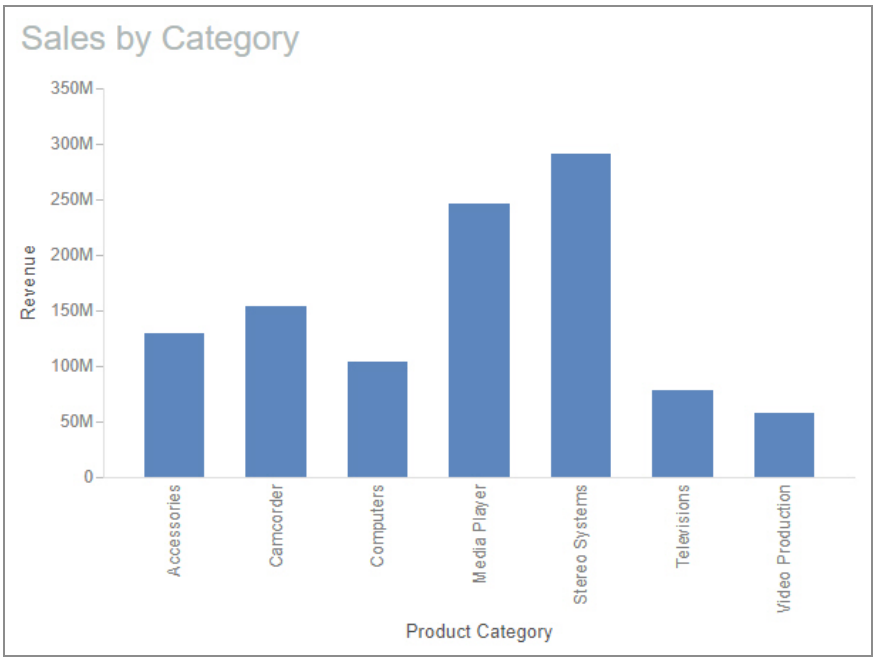
   The headers and footers display, as shown in the following image.



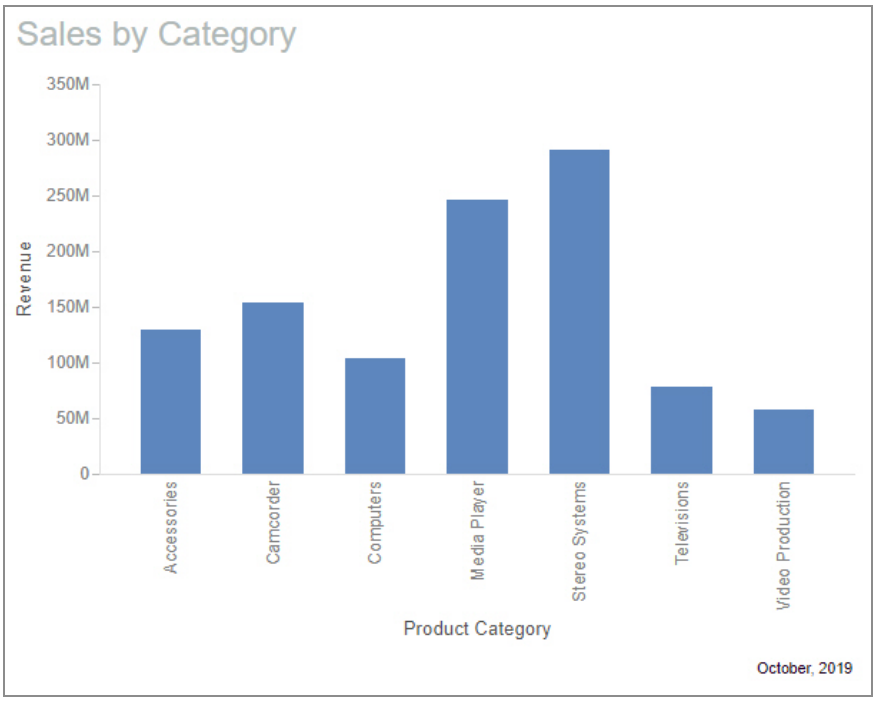
5. Double-click the heading and change it to **Sales by Category**.

   The styling options to edit the header and footer text are shown in the following image.

6. Change the font color to gray and change the font size to 20, as shown in the following image.



7. Change the footer to read **October, 2019**.
8. Change the font size to 8 and right-justify it, as shown in the following image.



Using headers and footers, you can add the finishing touches on your charts,

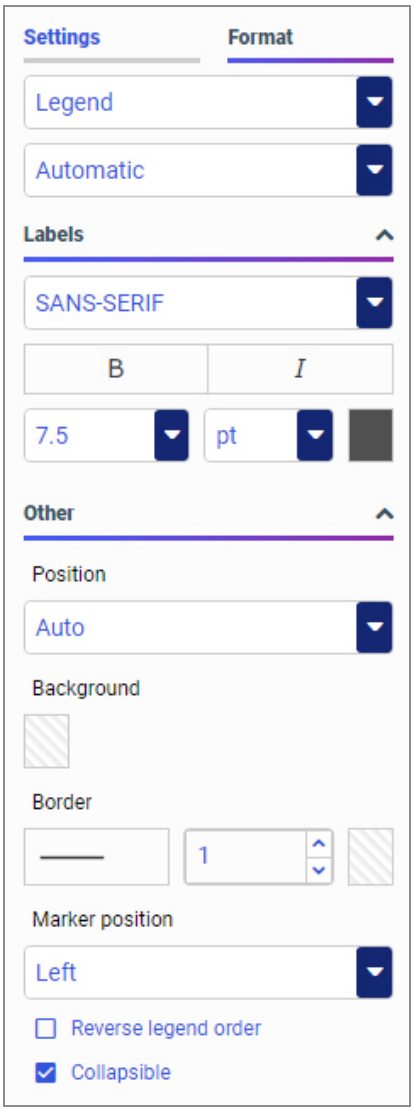
identifying them with useful information for your audience. For example, when sharing and distributing your charts, headers and footers can help identify and streamline your communication.

Formatting Legends in a Chart

In a chart, the legend identifies values according to the color-coded data values that display. The legend typically displays on the right side of the chart, but you can change the location using the formatting options. You can format a legend in any of the following ways:

- Turn the Legend On, Off, or set it to Auto.
- Change the font features of the legend (for example, bold or a larger font size).
- Change the format of the title of the legend.
- Access options to change background options, including setting the background color and setting the border line width, size, and color.
- Set the display options for the legend.

To access the legend formatting options, click the Format tab. From the quick access list at the top of the tab, select **Legend**. The Legend formatting options display in the following image.

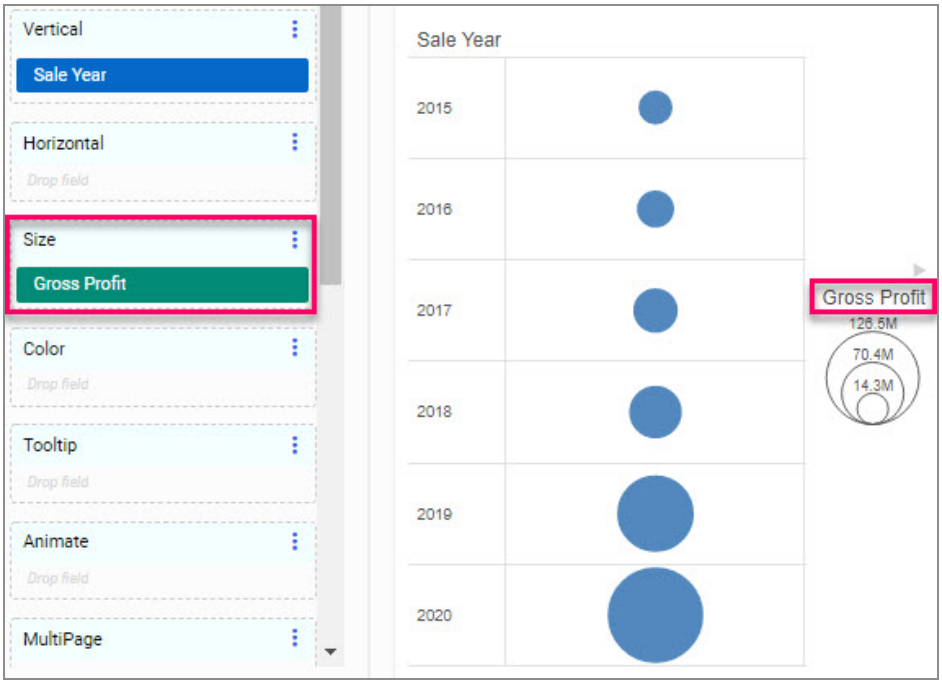


Use the On, Off, and Auto buttons to control how the Legend appears on your chart. You can optionally select On or Off, depending on whether you want to display the legend in your chart. The legend display setting is set to Auto, by default, which displays the legend only if there are multiple series in the chart.

Note: Occasionally, charts are large and require additional real estate. Hiding the legend, or turning it off, enables you to preserve additional room as required by the chart.

Under Labels, you can format the font used for the label text in your legend. These options include Font type, Style, Size, and Color.

Depending on the type of chart you use, adding data to a specific field automatically generates a title for the chart legend. For example, the following image displays a matrix marker chart that allows you to compare the differences between values by circle size. Since the measure Gross Profit has been added to the Size bucket, the legend title for this chart shows as Gross Profit, which is highlighted in the following image.



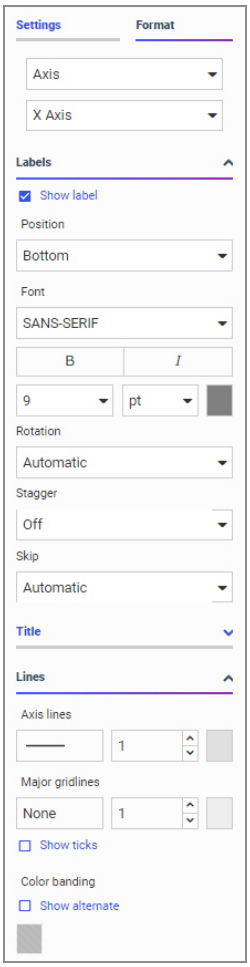
Under Titles on the Format tab, you can choose to show or hide the legend title with the *Show Titles* checkbox. You can also choose the font style and formatting of the legend title.

Under Other on the Format tab, you can perform tasks such as changing the position, setting the background color, and setting the border line width, size, and color. You also have options to display the legend options in reverse order and set it as collapsible.

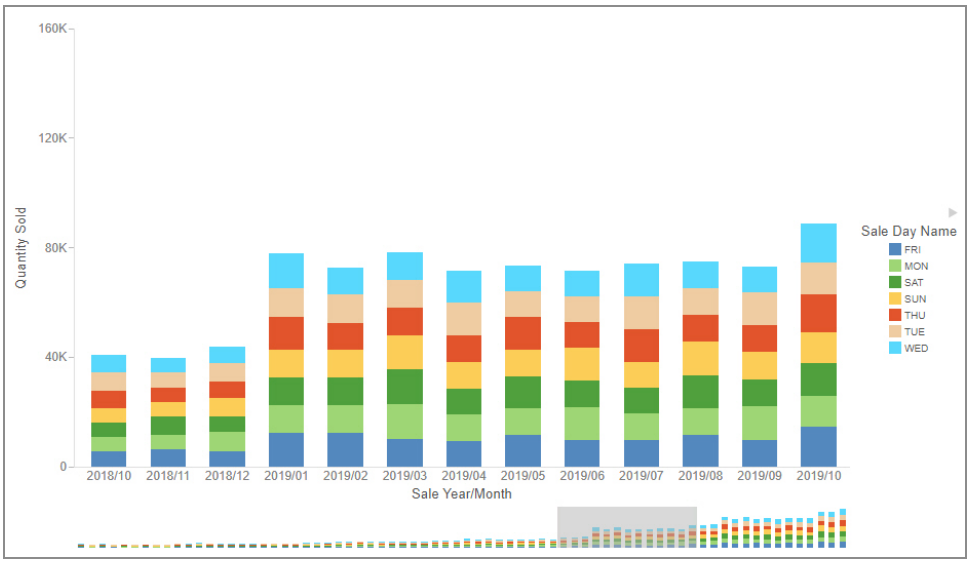
Using Axis Options in a Chart

Depending on the chart type (for example, bar chart), you can format the axes to customize the display of the information. This includes items such as labels, titles, and font formatting. For example, you can choose to hide the labels in your chart or format the font to add clarity to your chart. You can easily customize the X and Y axis with options that suit your needs. To access these options, select **Axis** from the quick access menu on the Format tab. Other options, such as dual-axis, bi-polar axis, and split axis behavior, and a continuous time axis, are available by right-clicking a field once it has been added to your chart or using the menu next to the Vertical bucket.

You can rotate the labels in your axes as well as stagger them. This allows you to shift the display of information, which is particularly useful when your chart is very dense. You can modify the lines for individual axes, enhancing the frame of the axis on the chart. You can also show ticks, which allows you to view milestones in your data. You can also change the position of an axis, enabling you to dictate where your axis information displays (for example, right). The options on the Format tab for formatting an axis are shown in the following image.

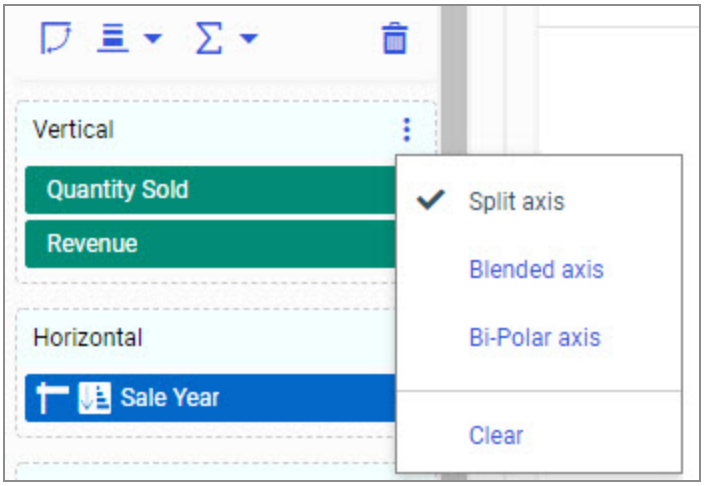


In bar, line, and area charts, you can control x-axis scrolling behavior from the Scroll menu. By default, the Scroll option is set to **On** and the scrollbar is enabled. When a large number of values are displayed on the x axis, a scrollbar generates so that they all have enough space to fit comfortably in the visible area of the chart. To disable the scrollbar, set the Scroll option to **Off**. When the scrollbar is not enabled, points and labels are compressed to fill the area occupied by the chart. As an alternative to the basic scrollbar, set the Scroll option to **MiniChart**. Instead of using a basic, default scrollbar setting, the minichart option provides a simplified image of the chart, with a transparent scrollbar, as shown in the following image.



You can point to the edge of the minichart scrollbar and use the double-headed arrow cursor to change the visible area of the chart by expanding or contracting the scrollbar. To set the default minichart scrollbar size, use the Count property that appears on the Format tab when you select the **MiniChart** option. The count represents the number of values initially visible on the x axis. For example, the default Count value of 10 means that a maximum of 10 values display in the chart at all times, regardless of the physical width of the chart area.

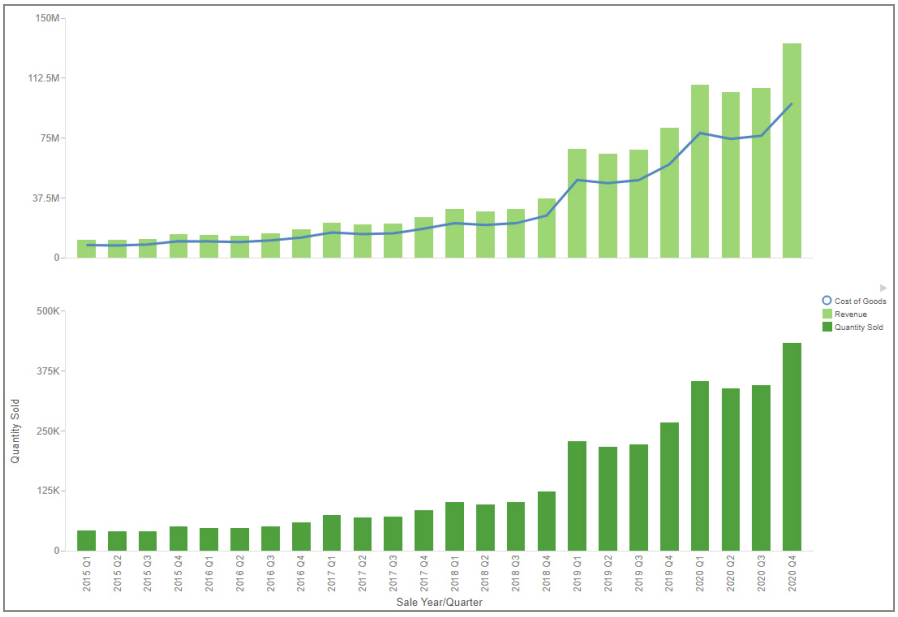
In bar, line, and area charts, you can also choose whether the y axis, or vertical axis, should be shared between all measures, or split so that each measure is separated and generates separate bars, lines, or areas. By default, the axis is blended, so all measures share the same y axis. To split the y axis, on the Settings tab, click the menu next to the Vertical bucket (or Horizontal bucket if the axes have been swapped), and click **Split axis**, as shown in the following image.



This option is especially useful if there are large disparities between the values of different measure fields. For example, the revenue values in a data source may be many times greater than the quantity sold values. To merge the axes back together, click the same menu, and then click **Blended axis**.

Alternatively, if you want to split the measure fields in a bar, line, or area chart into groups on separate axes, you can use the bi-polar axis option. The bi-polar axis option creates a second set of axes to which you can add some of your measure fields, instead of splitting each measure onto a separate axis. To enable this option, click the menu next to the Vertical bucket and then click **Bi-Polar axis**. To switch the y-axis that a measure field uses in bi-polar axis mode, click the axis icon next to the field in the measure bucket, or right-click a measure field and click **Top Axis (Y1)** or **Bottom Axis (Y2)**.

When creating a bi-polar axis chart, it may be useful to change the chart type of the risers for one of the measures on an axis to differentiate it. Right-click the measure field in the Vertical bucket (or the Horizontal bucket if the axes have been swapped), point to **Shape**, and choose whether the chart type for that measure should be bar, line, or area. The following image shows a bi-polar axis chart in which the Cost of Goods field is represented by a line chart.



Another way to show multiple measure fields on separate axes is to use dual axes. Instead of splitting the chart into horizontal sections, one or more measure field is plotted against the y1 axis on the left, and the other uses the y2 axis on the right. To specify which axis a measure field should use, when the **Blended axis** option is selected, click the axis icon next to the field in the measure bucket, or right-click the field and click **Left Axis (Y1)** or **Right Axis (Y2)**. Each of these axes can be styled separately from the Axis options on the

Format tab. When using dual axes, take note of which axis is used for each measure, as the values displayed in the chart may visually appear to be closer than they are in reality.

The same options are available for horizontal bar, area, and line charts, but affect the x axis, or horizontal axis, instead.

Format Axes

You can format the axes of your chart to customize the display of information, including labels (rotated and staggered), titles, and axis-specific fonts.

Procedure

1. Create a chart using WebFOCUS Designer, or open an existing WebFOCUS Designer chart.

   Axes are used in bar, line, area, scatter, bubble, and circle plot charts.

2. On the Format tab, click **General** to open the quick access menu, and then click **Axis**.

   The options for editing your axes display.

   You can select the Y-axis or edit the X-axis. The axis selection determines where changes are applied.

3. On the X-axis, perform the following formatting tasks:

   a. In the Labels section, change the font format of the labels to bold.

   b. Expand the Title section and change the size of the font for the axis title to 16. Change this to bold as well.

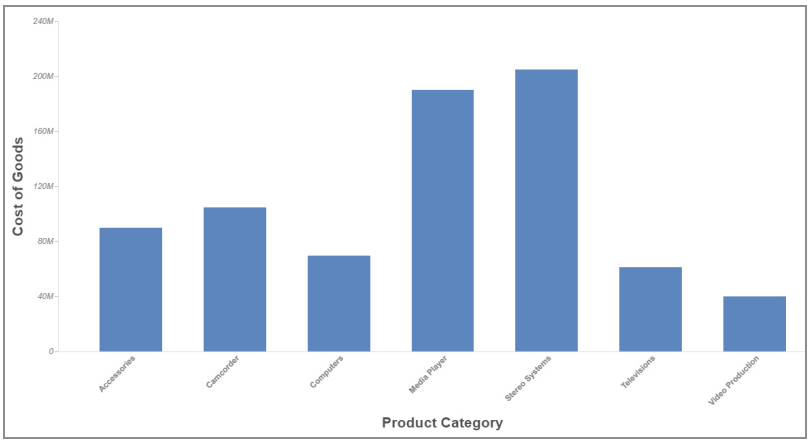
4. Select the Y-axis option and perform the following formatting tasks:

   a. Change the font format of the label to italic.

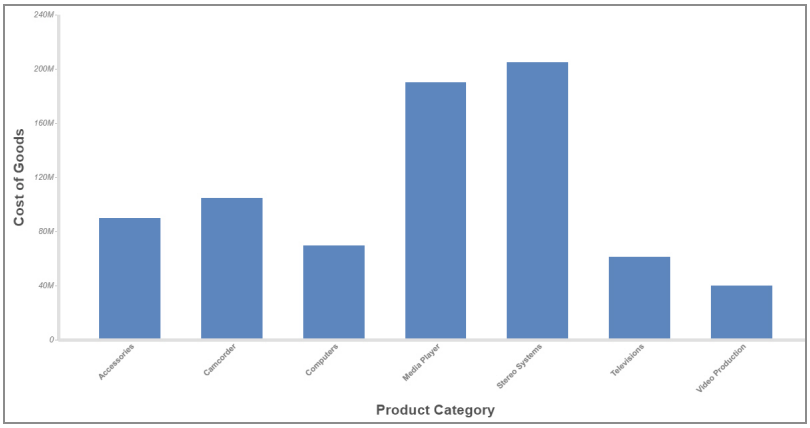
   b. Change the size of the font for the Title to 16. Change this to bold as well.

   When you preview the chart, you can see that styling on the axes has been modified, giving you a custom look and feel for your chart, as shown in the following image.

5. You can rotate the labels on the X-axis. In the Labels group, use the Rotation option to rotate the labels by 45 degrees, as shown in the following image.



6. You can also modify the line size of the axes. In the Lines group, use the Axis lines option to change the line size for both axes to 5. Making the axes lines bigger creates a more definitive frame, as shown in the following image.



With the axes of your chart formatted, you can continue making modifications or apply similar formatting to the axes in other chart types.

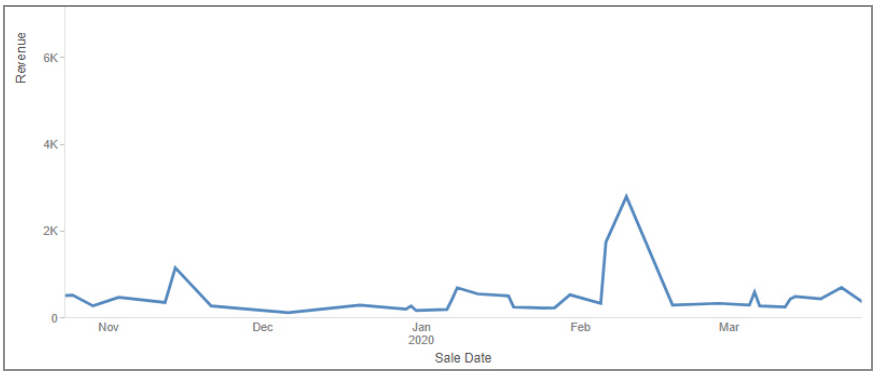
Controlling the Display of Time-Based Axes

By default, when you create a chart that has a dimension on an axis, missing values are not displayed on that axis. For example, if you create a bar chart showing revenue by product category, but there are no revenue values, including zero, for televisions, then televisions do not appear on the horizontal axis in the bar chart.

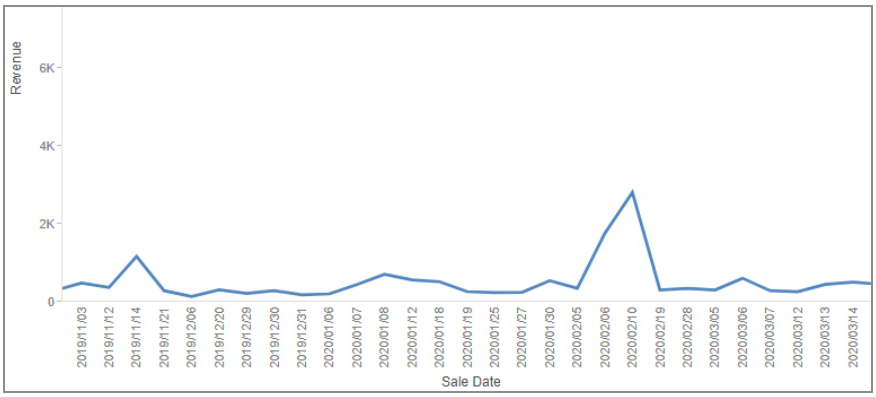
However, when you create a line or area chart using a date or date-time field as one of the axes, this is not the case. In these chart types, when a date or date-time field is used, the time axis option is enabled by default. This option allows you to show the entire, continuous range of time encompassed by your data, even if there are missing values in

between. Missing values are extrapolated based on the nearest values. The time axis option allows you to see changes in your data over time on a continuous scale, displaying date values more intuitively and making it easier to recognize gaps in your data.

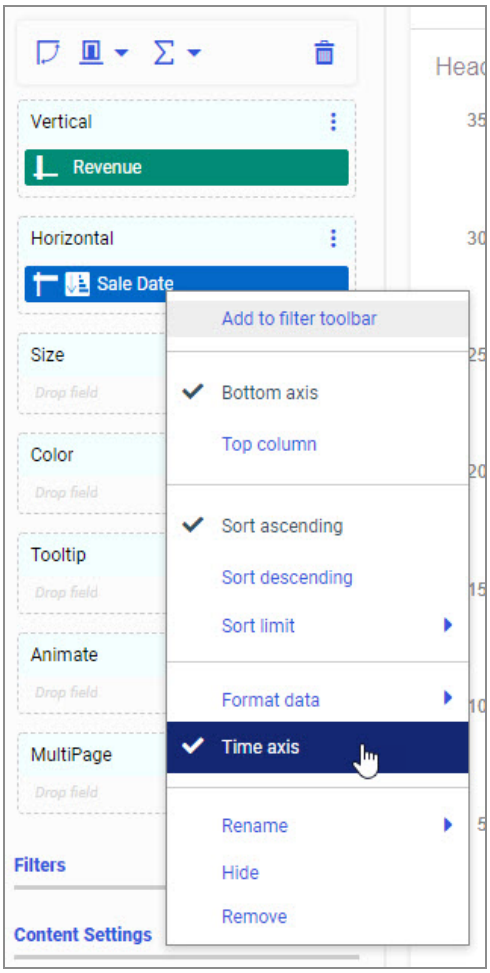
When the time axis option is enabled, the values in the chart are plotted along a continuous date axis, as shown in the following image.



Although there were no sales between December 6 and December 20 in the image shown above, those days occupy the same amount of space on the x-axis as the days in which there were sales, and the line is extrapolated for them. The same chart with the time axis option disabled is shown in the following image. Only dates with values in the data set of the chart display. Since not all dates appear in the chart, each existing date value is labeled on the axis.



To disable the time axis option and show only the date values in your data source, right-click the date or date-time field in the Horizontal or Vertical bucket of your chart and deselect **Time axis**, as shown in the following image.



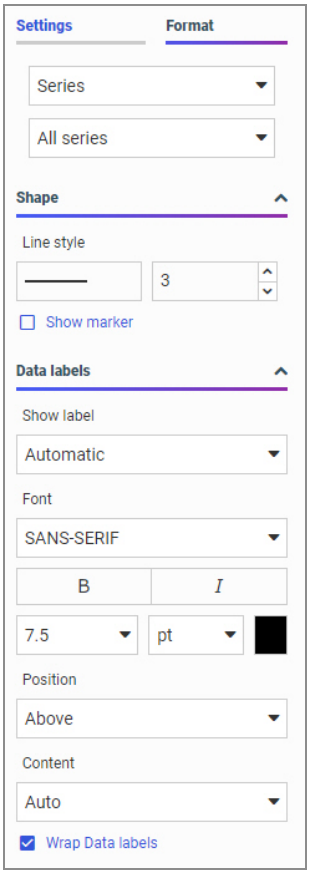
To re-enable the time axis option, right-click the date or date-time field and click **Time axis** again.

Formatting Series in a Chart

A series represents a set of related values in a chart. These could be different measure fields in a chart, or different dimension field values in a chart. You can format all series together, or format each separately, including color, shape, display options for labels, and other options, including the ability to hide overlapping labels. You can select a specific series in a chart to which to apply changes, or you can select **All Series**, which applies changes to all series in the chart.

Having the ability to format by series gives you control over your content and allows you to customize display options at the series level. For example, you might want to color code a chart based on a range of values. You can also specify options for the data labels of the series. By default, these are enabled or hidden automatically depending on the chart type,

but can be turned on or off. You also have the standard suite of font options, as shown in the following image.



Different kinds of charts allow you to make different series-level style changes. For example, in a bar, area, or line chart you can set the width of all bars, or change a series to display as a line or area instead of a bar or bar segment. In a ring pie chart, you can change the size of the hole in the middle when viewing the options for all series, and on a scatter plot or bar, area, or line chart, you can add and style a trend line with different formulas for all series or an individual series. Other chart types allow different styling changes.

Additionally, some series styling options are only available when modifying all series in a chart, or only available when editing a single series. For example, when creating a bar chart, you can set the bar width for all series, but not for a single series. On the other hand, you can change the fill color for a single series, but not for all series in the chart.

In a line chart, use the series format option to change shape, data labels, and trend lines. The Shape tab contains the following options:

- **Line style**. To set the line style and size.

- **Riser Width**: To set the width for riser. The default value is automatic.
- **Marker Size**: To set the marker size using the slider.

The Data labels tab contains the following options:

- **Show label**. Allows you to display data labels. The default value is **Automatic**.
- **Font**. Allows you to set font style, bold, italics, font size, and font color.
- **Position**. Allows you to set the position of the data label.
- **Format Label**. Allows you to set a data label format. The default is **General**.
- **Content**. Allows you to set the content for the data label. You can use the following terms to decide the best way to display the content of your data labels.
    - **Auto.** The chart engine decides what data label information to show. This is usually the value.
    - **Label.** Shows the series label of the riser, marker, or slice (same as legend label)
    - **Value.** Shows the value of the riser, marker, or slice, using the numeric format of the field. For example, if the field defined in the master file is US Currency with two decimal places of precision, then that is what the dataLabel is ($123.45).
    - **Percentage.** Shows the percentage of the riser/slice based on the group to which it belongs.
    - **Value, Percentage.** Shows the value of the riser, marker, or slice, with numeric formatting and the percentage of the riser/slice based on the group to which it belongs.
    - **Label, Value.** Shows the series label of the riser, marker, or slice (same as the legend label) and the value of the riser, marker, or slice, with numeric formatting.
    - **Label, Percentage.** Shows the series label of the riser, marker, or slice (same as the legend label) and the percentage of the riser/slice based on the group to which it belongs.
    - **Label, Value, Percentage.** Shows the series label of the riser, marker, or slice (same as the legend label), as well as the value of the riser, marker, or slice, with numeric formatting. It also shows the percentage of the riser/slice based on the group to which it belongs.

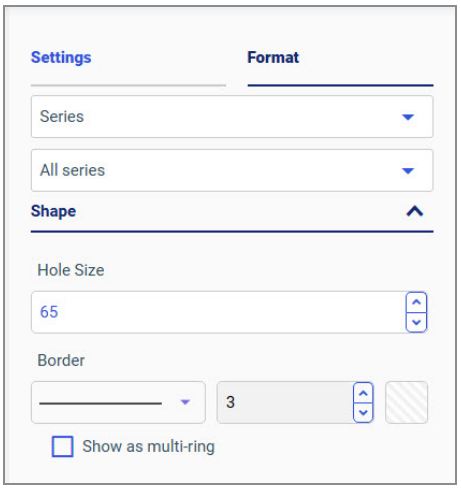
- **Wrap Data labels**. Allows you to wrap the data labels.

The Trend Lines tab contains options like:

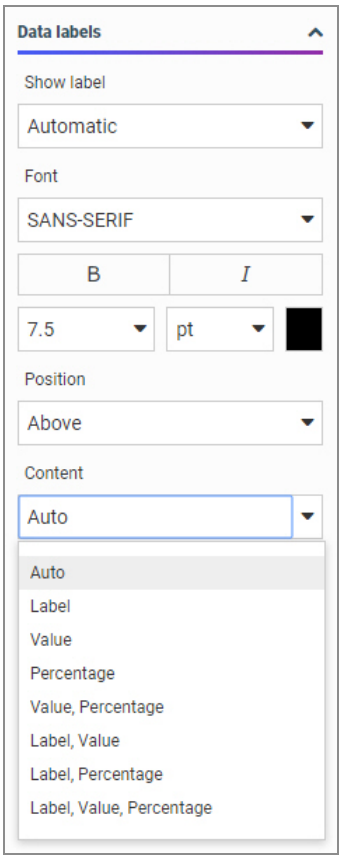
- **Show trend line** Toggles between displaying trend lines.
    - **Line**. Allows you to set the trend line pattern, size, and color.
    - **Mode**. Allows you to set the mode of the trend line.

In a ring pie charts, using the series format option you can change the hole size, border pattern, and border color as shown in the following image. The shape tab contains options like:

- **Hole Size**: Allows you to set the size of hole for a ring pie.
- **Border**: Allows you to set the border pattern, border size, and border color.
- **Show as multi-ring**: Allows you to switch between normal ring pie and multi-ring pie.



When working with series in a chart, you can also set an option to control the display of data labels in your chart. The default is Auto. This gives you the ability to specify how your data is presented (for example, by Value or Percentage), which is particularly useful in cases where you want to save real estate when using data labels in your chart, or show additional information. You can click the dropdown to access a full list of content options, as shown in the following image.



You can use the following terms to decide the best way to display the content of your data labels.

- **Auto.** The chart engine decides what data label information to show. This is usually the value.
- **Label.** Shows the series label of the riser, marker, or slice (same as legend label)
- **Value.** Shows the value of the riser, marker, or slice, using the numeric format of the field. For example, if the field defined in the master file is US Currency with two decimal places of precision, then that is what the dataLabel is($123.45).
- **Percentage.** Shows the percentage of the riser/slice based on the group to which it belongs.
- **Value, Percentage.** Shows the value of the riser, marker, or slice, with numeric formatting and the percentage of the riser/slice based on the group to which it belongs.
- **Label, Value.** Shows the series label of the riser, marker, or slice (same as the legend label) and the value of the riser, marker, or slice, with numeric formatting.

- **Label, Percentage.** Shows the series label of the riser, marker, or slice (same as the legend label) and the percentage of the riser/slice based on the group to which it belongs.
- **Label, Value, Percentage.** Shows the series label of the riser, marker, or slice (same as the legend label), as well as the value of the riser, marker, or slice, with numeric formatting. It also shows the percentage of the riser/slice based on the group to which it belongs.

The data labels can also be formatted using the **Format Label** option. The dropdown contains the following options:

- **General**
- **Use Pattern**
- **Use Pattern/100**
- **No decimals**
- **Percent with no decimal**
- **Percent with two decimals**
- **Currency general**
- **Currency with no decimals**
- **General in thousands**
- **Currency in thousands**
- **General in millions**
- **Currency in millions**
- **General in billions**
- **Currency in billions**
- **General in trillions**
- **Currency in trillions**
- **Value in thousands no decimal**
- **Value in thousands two decimals**
- **Percent with no decimal / 100**
- **Percent with one decimal / 100**

- **Percent with two decimals / 100**
- **Thousands separator no decimal**
- **Thousands separator two decimals**

For **Use Pattern** and **Use Pattern/100**, you can enter a standard number format pattern for the data label using the **Custom Label** option. The following table describes the characters that you can use in a custom format:

Character	Description
#	Is a digit.
0 (zero)	Shows as absent.
. (period)	Is a placeholder for decimal separator.
, (comma)	Is a placeholder for grouping separator.
; (semicolon)	Separates formats.
- (dash)	Is the default negative prefix.
% (percent)	Divides by 100 and shows as a percentage.
x	Determines that any other characters can be used in the prefix or suffix.
‘ (apostrophe)	Is used to quote special characters in a prefix or suffix.

When creating a stacked bar, stacked area, or stacked line chart, you can also select the **Show stacked totals** option to show the summed total of all series at the top of each bar or sort-value point.

You can also Wrap Data labels, which allow you to truncate available chart space or show your data on multiple lines. The following examples show how the wrapping option works.

Example of WrapDataLabel=True:

"France

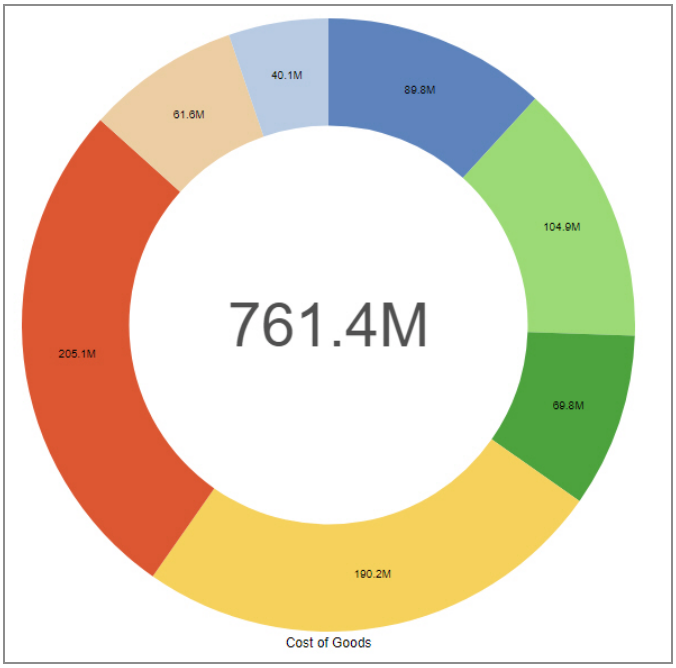
$123.4

23.4%"

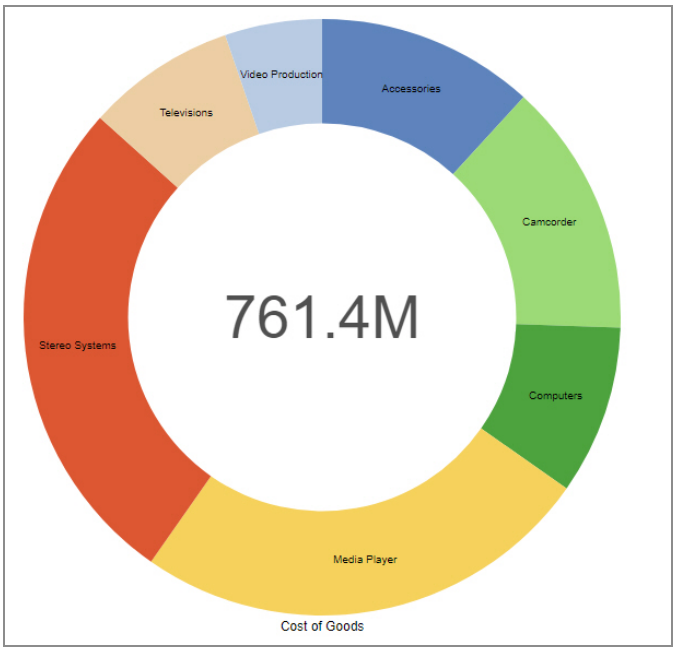
Example of WrapDataLabel=False:

"France, $123.4, 23.4%"

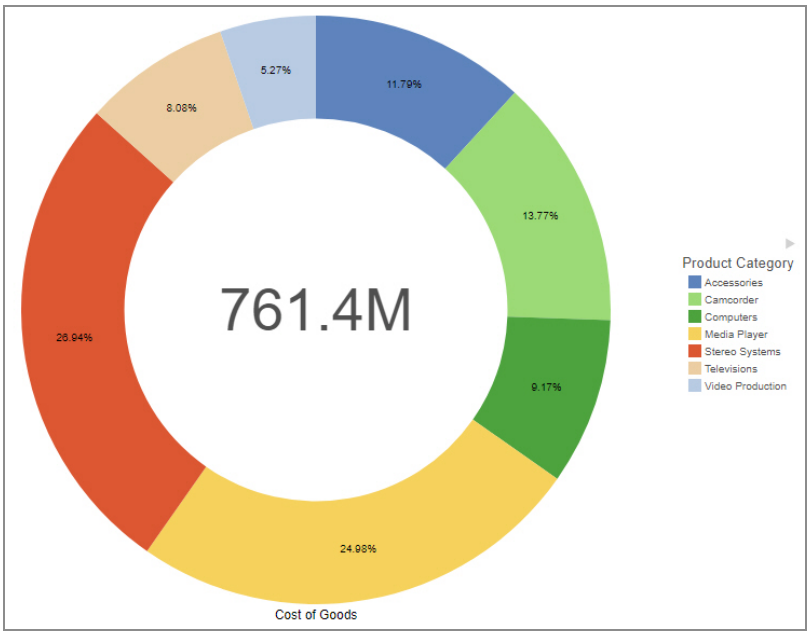
Specifically, the data label options allow you to determine what is shown when Show label is ON. For example, Label, Value, Percentage. If the option is set to Auto, the chart engine decides what it thinks is the best content to show. Typically, this is the value of the riser or slice. For example, on a basic pie chart, the Auto setting produces the following result.



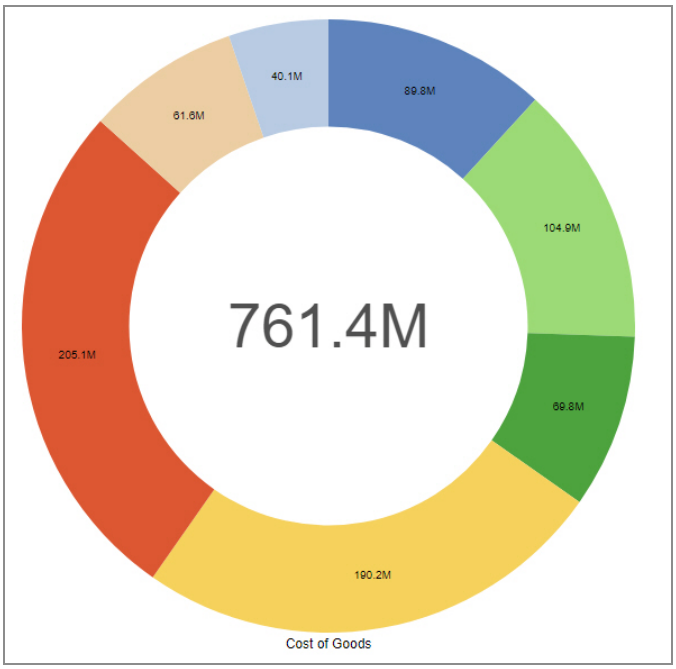
You have additional content choices. For example, you can choose Label, which corresponds to the series label that is shown in the legend. When you select the Label option, you also have the option of turning the legend off, so as not to duplicate the information that is displayed in your chart. The Label option is shown in the following image.



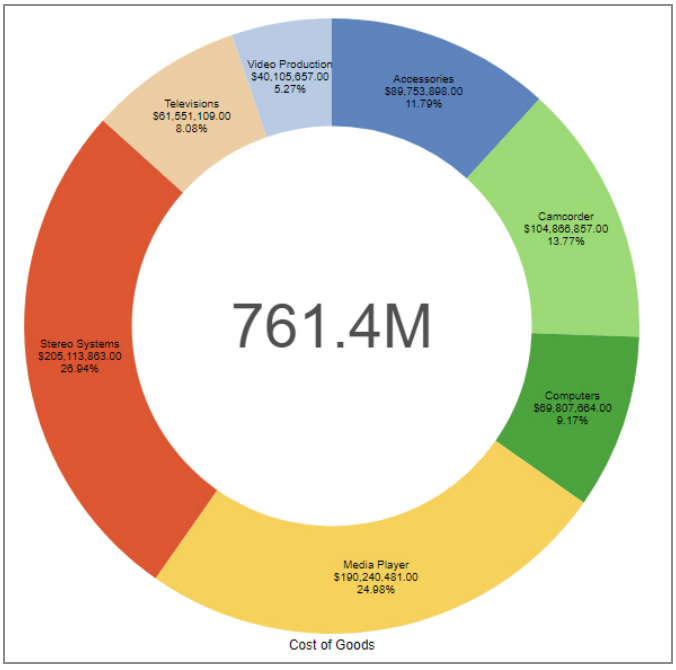
You can also choose Percent, which shows the percentage of the whole for each riser or slice. This is very useful for a pie or stacked bar chart, as these are the charts that are best used to visualize the concept of percentage-related content, as shown in the following image.



You can also display the Value, which is the riser/slice value. This is often the same thing that you get if you choose Auto.



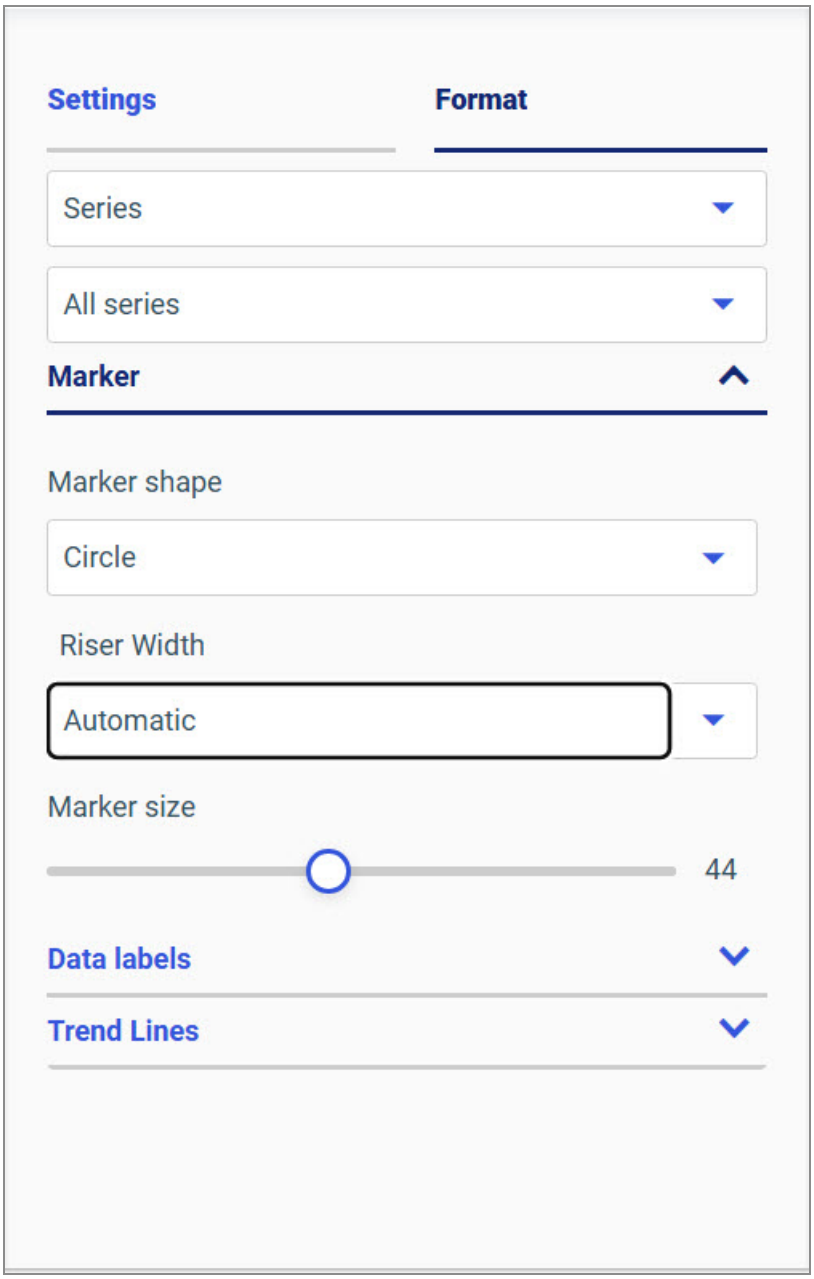
There are also options for you to combine three choices, such as Value, Label, and Percent. This allows you to display all three items, as shown in the following image.



Click **Wrap Data labels** to display the content on three separate, unique lines, or clear the **Wrap Data labels** checkbox to display all label information on a single line.

In a scatter/bubble chart, using the series format option you can change the marker for all series or a single series as shown in the following image. The marker tab contains options like:

- **Marker Shape**: Allows you to set the marker shape.
- **Riser Width**: Allows you to set the width for the riser. The default value is automatic.
- **Marker Size**: Allows you to set the marker size using the slider.



Format a Series

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

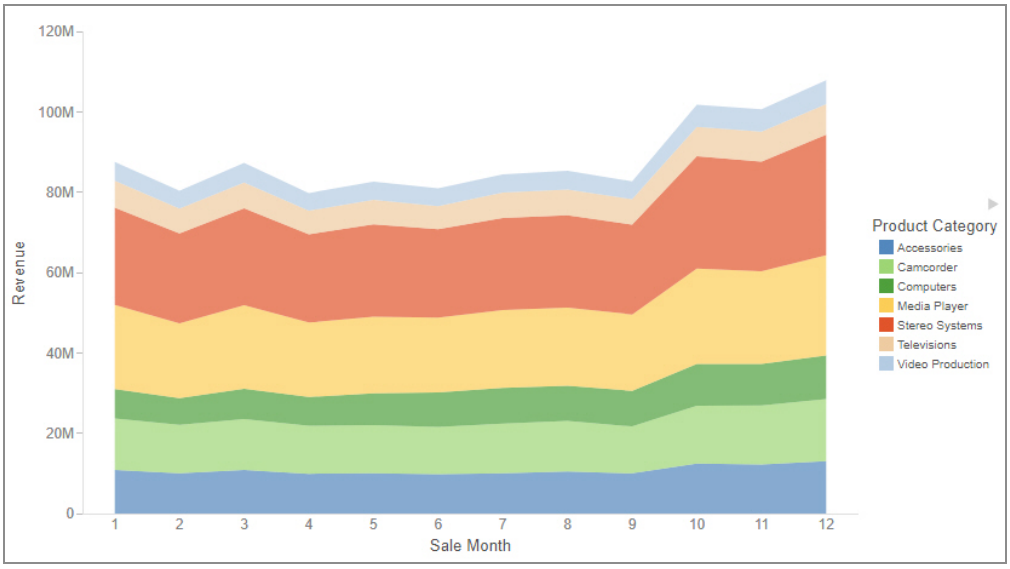
   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Create a Vertical Stacked Area chart.

4. Add a measure to the Vertical bucket, a dimension (for example, a time-based dimension with month or year values) to the Horizontal bucket, and another dimension to the Color bucket, as shown in the following image.



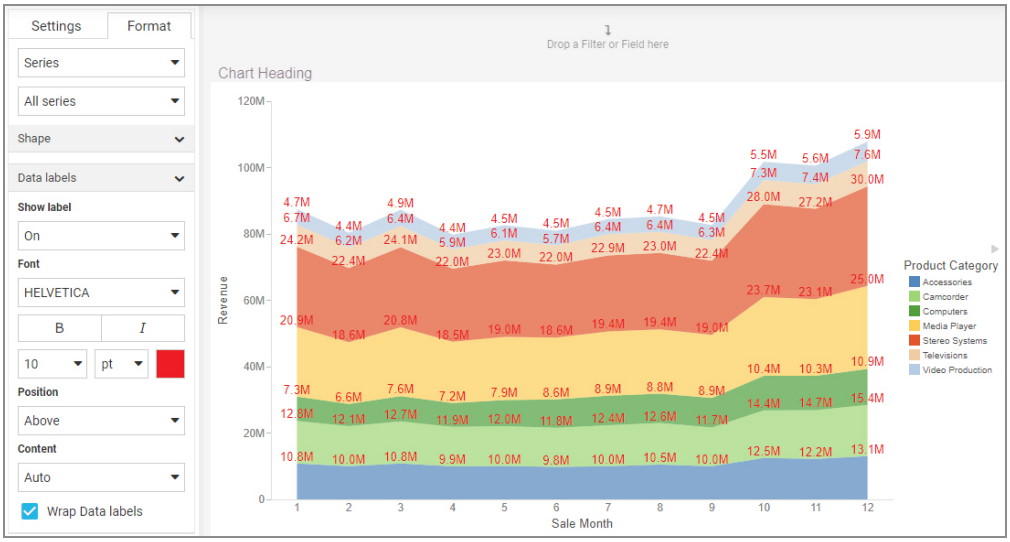
5. On the Format tab, open the quick access menu and then click **Series**.

6. In the Data labels section, in the Show label group, turn data labels on by changing the setting from Automatic to On.

   Since **All series** is selected by default, labels are displayed for every series in your chart.

7. Format the labels with 10 point, red font using the font options.

The values in the chart reflect your custom formatting, giving you a better view of your data, as shown in the following image.



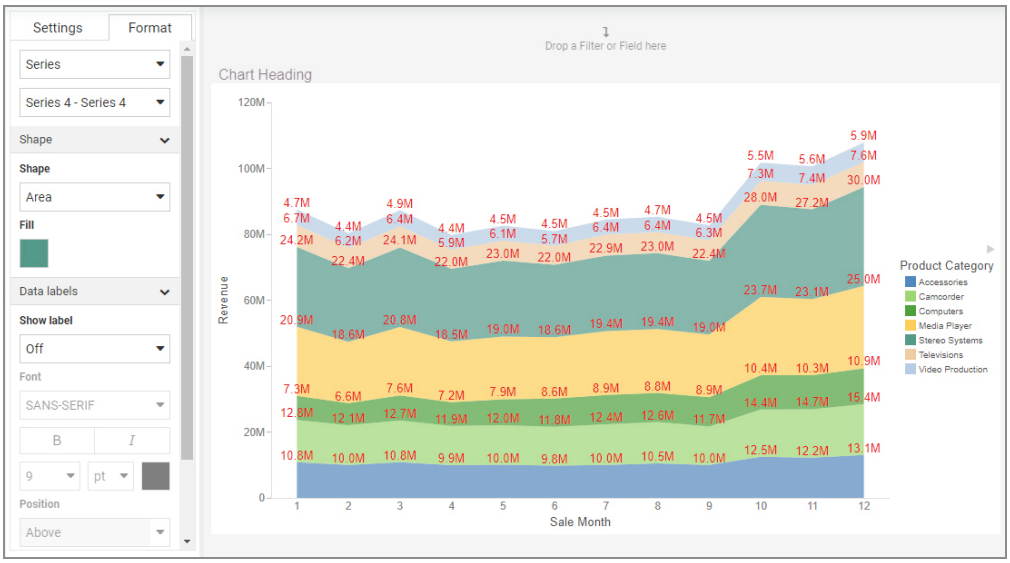
8. Change the color of one of the risers.

    a. From the series selection dropdown menu, on the Format tab, directly below the quick access menu, select a single series. Each series represents a value from the field in the Color bucket.

    If your chart contains multiple measure fields, then each series represents a measure field in addition to or instead of a dimension value.

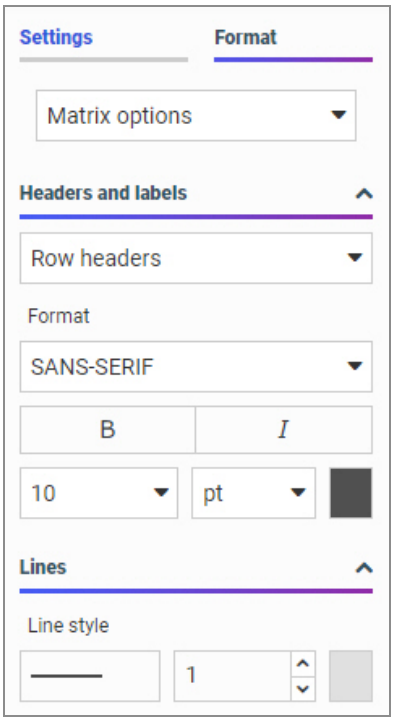
    b. In the Shape section, change the color selected for the Fill option to a color of your choice.

The selected series riser are updated to show the new color, as shown in the following image.



Formatting Matrix Charts

If you are working with a chart type that supports a matrix format (for example, Matrix Marker, or another chart type utilizing matrix rows and columns), WebFOCUS Designer provides a selection of formatting options that you can use to customize and enhance the styling of your chart. A matrix format is a grid that contains values based on the intersecting data points, which is useful for reviewing changes and trends over time. Available formatting options for matrix charts include *Headers and labels*, and *Lines*, as shown in the following image.



You can customize the row and column headers and their corresponding values in a matrix chart. Specifically, you can change the font type, font size, and color. You can also change the emphasis of the font using bold or italic styling. You can also change the alignment of row values text.

When working with lines in your matrix chart, you can change the line style (for example, solid or dotted) and the thickness. These formatting options allow you to make visible enhancements that improve the appearance and presentation of your matrix charts.

Format a Matrix Chart

To format a matrix chart:

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

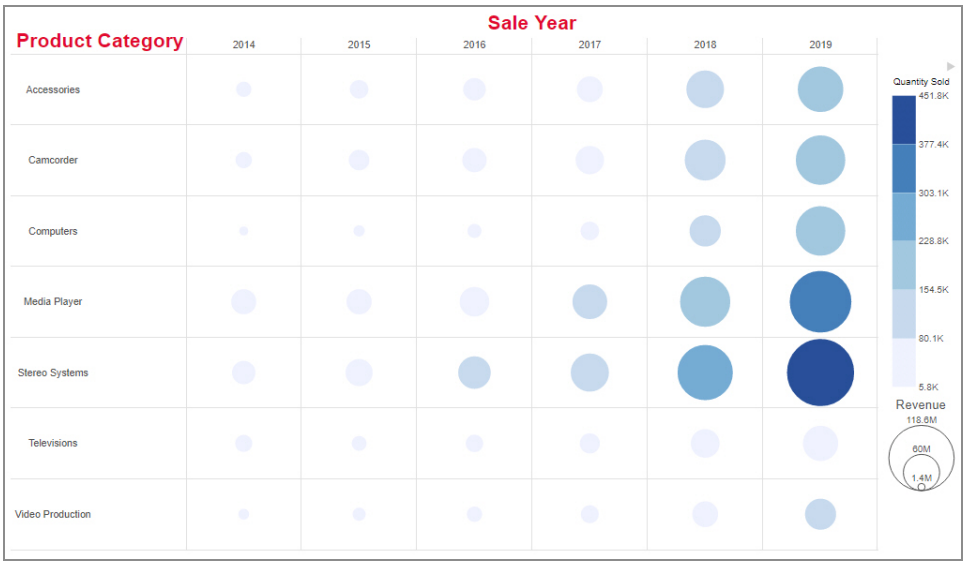
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a

single content item.

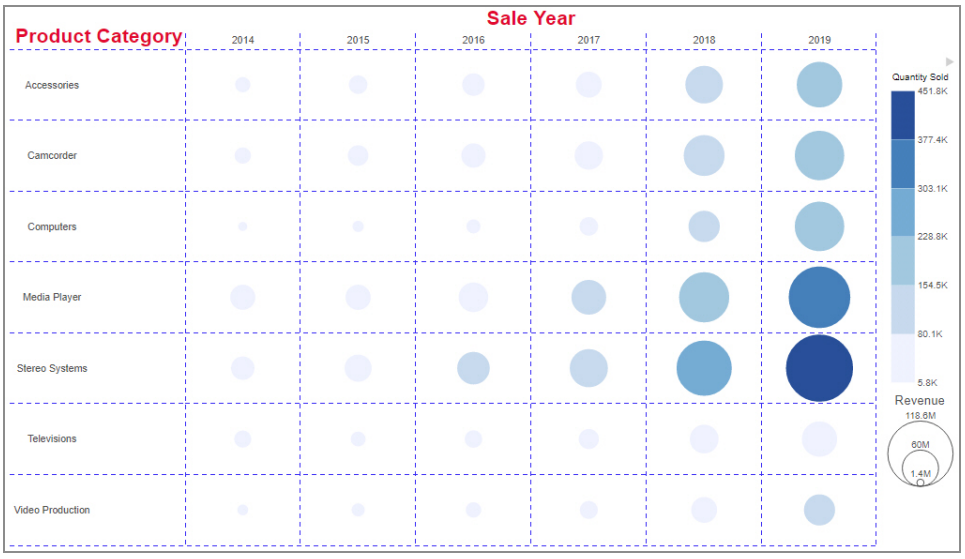
3. From the Content picker, select the **Matrix Marker** chart type.
4. Add two dimensions and two measures to the chart. These data fields should be placed in the Vertical, Horizontal, Size, and Color buckets.
5. On the Format tab, click **General** and then click **Matrix options** from the dropdown list.
6. Apply formatting changes for the matrix chart, including:
    a. Headers and labels, which allow you to customize the font options for row and column headers and values. Font options include font type, bold, italic, font size, and font color.
    b. Line style, which allows you to adjust the type, size, and color of the lines for the matrix chart.
7. Change the font being used for row and column headers to bold, red, and size 16 font.

   The updated matrix chart now displays customized row and column headers, as shown in the following image.



8. Using the options in the Lines section, change the line style to blue, dashed lines.

   The resulting matrix marker chart resembles the one shown in the following image.



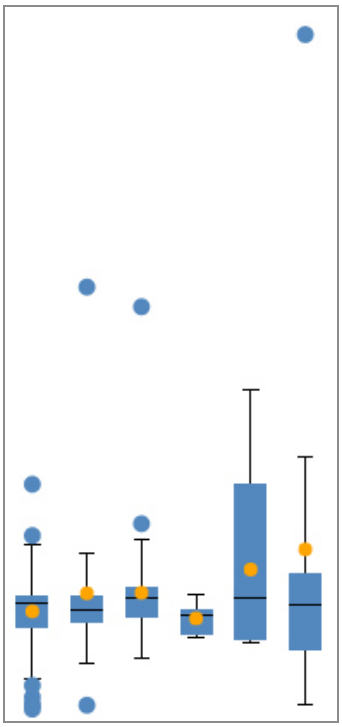
Formatting Box Plots

A box plot is a common chart type used to show key distribution information for a set of data points. A box plot displays outliers, the median, the upper and lower quartile, and the maximum and minimum with outliers excluded, by default. However, you can use the Box Plot options on the **Format** tab to show the mean, or average, as well. Additionally, you can change the display of the whiskers from lines to boxes, and change the style of the median and whisker lines.

To access the Box Plot properties when creating a box plot, click the **Format** tab and select **Box Plot options** from the Quick Access menu. The following options are available:

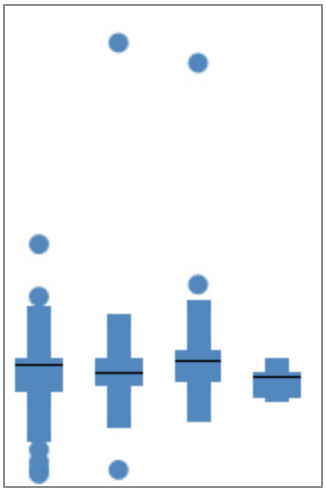
- **Show Mean.** Displays a marker at the mean point, which you can compare with the median to get an idea of the skewness of your data.

  An example of a box plot with mean markers enabled is shown in the following image.

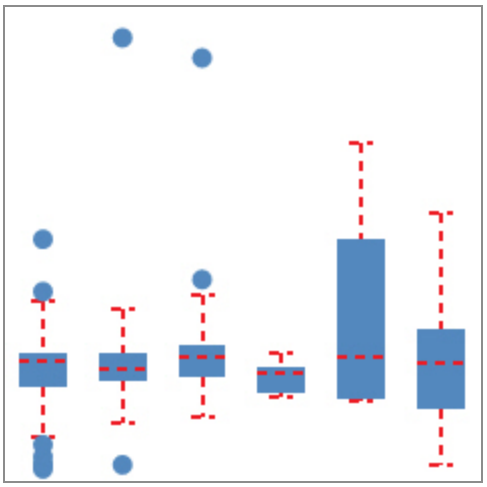


- **Show Hat as Box.** Changes the appearance of the whiskers in the box plot from lines to boxes.

  An example of a box plot with the Show Hat as Box option enabled is shown in the following image.



- **Line style.** You can change the pattern of the median and whisker lines from a solid line to a dotted or dashed line, and change the width and color of the lines.



Format a Box Plot

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. From the Content picker, select the **Statistical Boxplot** chart type.

4. Add a measure to the Vertical bucket and a dimension to the Horizontal bucket.

   A single measure value displays as a line in each column.

5. Use one of the following methods to generate a set of data for each column:

   - Add a dimension field to the Detail bucket. This field should provide multiple records for Horizontal bucket value.
   - Change the calculation option from Summaries to Details . If you have a very large data source, this may generate too many records to evaluate in the box plot.

   A set of box plots appears on the canvas, showing indicators for outliers, maximum

and minimum, median, and upper and lower quartiles.

6. On the **Format** tab, click **General** and select **Box Plot options** from the quick access menu.
7. Optionally, select the **Show Mean** checkbox to display a marker in each box plot indicating the location of the mean.
8. Optionally, select the **Show Hat as Box** checkbox to display the whiskers as narrow boxes on either side of the box showing the interquartile range.
9. Optionally, change the style of the median lines and whisker lines.

   Click the box showing an image of the line to change the line pattern to one of a variety of dashed and dotted lines. Use the spinner to change the width of the lines, in pixels. Click the color swatch to change the color of the lines.

   The box plot updates on the canvas as you make your changes.
10. Once you finish creating and formatting your box plot, save it, or convert it to a page to develop more content.

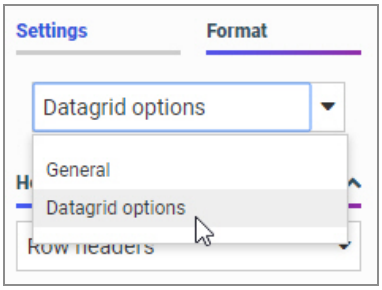
Formatting Data Grid Charts

A data grid is a type of chart that displays a tabular representation of your data, similar in structure to a tabular report. A data grid allows you to review data in a row and column format, similar to a printed report. Data grids are easy to create, and provide features such as a tooltip for each cell of the grid. WebFOCUS Designer provides numerous options to style and format a data grid.

Values in a data grid can be sorted, and data grids can be shared or saved for use on a page. A data grid is shown in the following image.

Product Category	Product Subcategory	Cost of Goods	Discount
Media Player	Blu Ray	$181,112,921.00	$10,895,633.29
Stereo Systems	Speaker Kits	$81,396,140.00	$4,954,243.27
	Home Theater Systems	$56,428,589.00	$3,943,920.23
Accessories	Headphones	$51,663,564.00	$3,516,913.33
Televisions	Flat Panel TV	$59,077,345.00	$3,478,828.52
Camcorder	Standard	$49,071,633.00	$3,214,786.74
Computers	Smartphone	$44,035,774.00	$2,790,775.51
Video Production	Video Editing	$40,105,657.00	$2,695,890.76
Stereo Systems	Receivers	$40,329,668.00	$2,643,045.39
Accessories	Universal Remote Controls	$36,037,623.00	$2,310,446.31
Computers	Tablet	$25,771,890.00	$2,018,134.59
Camcorder	Handheld	$20,576,916.00	$1,959,624.28
	Professional	$35,218,308.00	$1,933,997.25
Stereo Systems	iPod Docking Station	$26,119,093.00	$1,926,925.29
Media Player	Streaming	$5,064,730.00	$338,559.94
	DVD Players	$3,756,254.00	$258,593.13
Accessories	Charger	$2,052,711.00	$187,485.88
Televisions	CRT TV	$1,928,416.00	$118,654.68
Stereo Systems	Boom Box	$840,373.00	$62,739.39
Televisions	Portable TV	$545,348.00	$38,210.18
Media Player	DVD Players - Portable	$306,576.00	$26,356.05

You can format a data grid using the options on the Format tab. The Format tab contains two sets of options, General and Datagrid options, which you can access using the quick access menu, as shown in the following image.



The General section provides a set of options that are common to all chart types. These options are divided into three sections: Theme, Frame and background, and Other.

The Theme section provides a menu that allows you to select a StyleSheet to automatically format the data grid. You can select from a list of themes available with WebFOCUS, or click **Custom** to select a StyleSheet from the legacy templates or your repository.

The Frame and background section includes the following options:

- **Background.** Allows you to select a color for the background area behind the data grid.
- **Frame.** Allows you to select a color for the chart frame. This option allows you to change the data cell fill color in the data grid.
- **Frame Border.** The Frame Border settings are not applied to data grids. To style the

borders in the data grid, use the Border style settings under Headers and values in Datagrid options.

The Other section includes the following options:

- **Fit to container.** This option does not apply to data grids. It is used for bar, line, area, and scatter plot chart types.
- **Hide null groups.** When selected, if any rows or columns in the grid do not contain any data, they are hidden at run time.
- **Show null as zeroes.** When selected, cells for which no data is returned show a value of zero (0). When not selected, cells with no data appear blank, which is the default.

You can also select styling options that are specific to data grids. These are listed when Datagrid options is selected from the quick access menu on the Format tab. You can also access these options by right-clicking an area of the data grid and clicking **Style**.

The Datagrid options are divided into three sections: Headers and values, Background and padding, and Other.

The Headers and values section allows you to define the styling properties of the item selected from the Headers and values menu. You can set these properties for the row headers, column headers, cell values, and column totals. The Headers and values section contains the following options for each area of the data grid.

- **Format.** Allows you to select the font, text formatting, font size and units, and text color.
- **Alignment.** Allows you to set the text alignment to the left, center, or right side of the cells.
- **Border style.** Allows you to select the line style (for example, solid, dashed, or dotted), thickness, and color of the cell borders.

The Background and padding section allows you to style the cells in the data grid by adding bands and increasing the cell padding. Options in this section include the following:

- **Row color.** Allows you to add bands to the data grid to make the rows easier to distinguish. Select the **Alternate row color** checkbox to add alternating bands to the data grid and select a color from the Color picker to style them.
- **Vertical padding.** Allows you to set the vertical padding, in pixels, between the text and borders of each cell.

- **Horizontal padding.** Allows you to set the horizontal padding, in pixels, between the text and borders of each cell.

The Other section allows you to add column totals to the data grid and freeze column and row headers. The options in this section are as follows:

- **Show column total.** When selected, adds a column total row to the data grid. This row can be styled by selecting **Totals** in the Headers and values section. Show column total is not selected, by default.
- **Freeze column headers.** When the data grid uses a vertical scrollbar, selecting **Freeze column headers** keeps the column headers in place while scrolling so that you can see which column each cell belongs to. When not selected, the column headers are not frozen when scrolling. Column headers are frozen, by default.
- **Freeze row headers.** When the data grid uses a horizontal scrollbar, selecting **Freeze row headers** keeps the row headers in place while scrolling so that you can see which row each cell belongs to. When deselected, the row headers are not frozen when scrolling. Row headers are frozen by default.
- **Fit to container width.** When this checkbox is selected, the grid spans the entire width of its container. When this checkbox is not selected, the grid width is only as wide as is needed to show each column header fully.

Format a Data Grid

You use the options on the Format tab to customize a data grid. These options allow you to style the data grid to match your preferences while maintaining the simplicity and clarity of the data grid chart format.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. From the Content picker, select the data grid chart type .

4. Add fields to the data grid.

    a. In the Resources panel, with **Fields** selected from the sidebar, in the Dimensions area, expand **Product** and drag **Product,Category** to the Row bucket.

    b. In the Measures area, expand **Sales** and drag **Cost of Goods** and **Revenue** to the Measure bucket.

    c. In the Dimensions area, expand **Customer** and drag **Customer,Business,Region** to the Column bucket.

    A basic data grid has been created, showing Cost of Goods and Revenue sorted by Product Category across Customer Business Region.

5. Add a header to the grid.

    a. Double-click the Chart Heading text.

    The text is highlighted and Rich Text Editor displays.

    b. Type **Regional Sales** into the chart heading area and click the X on the styling toolbar.

    The chart header is changed to **Regional Sales**.

6. Open the Format tab.

7. Change the background color of the cells to seafoam green.

    a. In the Frame and background section of the Format tab, click the color sample under Frame.

    The color picker opens.

    b. Click **More** to access the color wheel. Select seafoam green by clicking on the wheel in a location between cyan and green, and then using the brightness slider to select a light seafoam green color. Alternatively, type a hex code value into the text box. For example, #adebcc.

    c. Click **OK**.

    The data cells in the data grid now have a seafoam green fill.

8. Access additional styling options for the data grid. Open the quick access menu and select **Datagrid options**.

9. Make the across column headers bold.

a. From the Headers and values dropdown menu, select **Column headers**.

b. Click the **Bold** button to make the text bold.

10. Add pink bands to the grid.

    a. Expand the Background and padding section.

    b. Select the **Alternate row color** checkbox.

       The rows now alternate between the seafoam green background and the default gray bands.

    c. Click the color sample under the Alternate row color checkbox.

       The color picker opens.

    d. Select the pink color from the palette.

       Now the data grid shows alternating seafoam green and pink rows.

11. Add column totals to the grid.

    a. Expand the Other section.

    b. Select the **Show column total** checkbox.

       The column total row appears on the data grid.

12. Style the column row total by changing the text and border color to purple.

    a. From the Headers and values dropdown menu, select **Totals**.

    b. In the Format subsection, click the color sample to change the text color for the column totals.

    c. Click **More** to access the color wheel, then select a shade of purple.

    d. Click **OK**.

       The column totals now show in purple text.

    e. Add a purple border to the columns total row.

       In the Border style subsection, click the color sample to open the color picker. From the Custom Colors palette, select the same purple color that you used for the text. This color was automatically saved and added to the Custom Colors palette.

    f. Click **OK**.

The text and border for the column totals now use the same shade of purple.

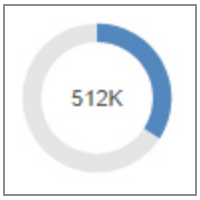
An example of what the resulting grid may look like is shown in the following image.

Regional Sales

Customer Business Region	EMEA		North America		Oceania		South America	
Product Category	Cost of Goods	Revenue	Cost of Goods	Revenue	Cost of Goo...	Revenue	Cost of Goods	Revenue
Accessories	$47,667,849.00	$68,812,972.66	$37,497,499.00	$54,160,885.45	$210,350.00	$307,271.64	$4,378,200.00	$6,327,208.78
Camcorder	$55,719,355.00	$82,072,171.39	$43,674,921.00	$64,321,724.39	$220,053.00	$335,357.69	$5,252,528.00	$7,736,448.77
Computers	$34,948,949.00	$52,021,126.36	$31,290,768.00	$46,016,670.36	$209,404.00	$303,155.55	$3,358,543.00	$4,975,529.85
Media Player	$101,282,350.00	$131,149,716.01	$79,074,473.00	$102,126,619.99	$475,372.00	$614,525.95	$9,408,286.00	$12,182,197.41
Stereo Systems	$109,228,523.00	$155,135,141.39	$85,362,237.00	$121,223,155.58	$481,962.00	$681,320.76	$10,041,141.00	$14,255,315.79
Televisions	$33,216,062.00	$42,288,326.80	$25,181,792.00	$32,072,458.16	$149,789.00	$190,177.46	$3,003,466.00	$3,830,170.39
Video Production	$21,304,481.00	$30,836,679.29	$16,726,755.00	$24,225,768.90	$90,544.00	$130,744.67	$1,983,877.00	$2,860,083.76
TOTAL	$403,367,569.00	$562,316,133.90	$318,808,445.00	$444,147,282.83	$1,837,474.00	$2,562,553.72	$37,426,041.00	$52,166,954.75

Customizing a Gauge Chart

A gauge is a simple chart that allows you to display basic KPI values. You can choose to display these values with a standard or simplified dial graphic, or alone, as text only. The default, simple, gauge type is shown in the following image.



You can change the gauge type from the display options, above the buckets on the **Settings** tab. Use the default, Simple option to show a simple gauge dial, use the Circular option to show a gauge dial with a pointer and tick marks, or use the KPI option to show text only.

When you create a gauge, the Gauge Properties option becomes available on the **Format** tab. You can change the following properties of the gauge label and value text:

- Label
  - **Show label.** Select this checkbox to show the name of the measure field represented by the gauge. This text only displays when using the Circular or KPI display options. For example, the following image shows a KPI gauge with the label position set to **Top**.

The following image shows a KPI gauge with the label position set to **Bottom**.

- **Position.** You can choose to place the measure label above or below a circular or KPI gauge.
- **Font.** Change the typeface, font style, size, and color of the label text as it displays in a circular or KPI gauge.

- Value
  - **Show value.** When creating a circular gauge, select this checkbox to show the gauge value as text, or clear it to hide the text and only show the value graphically. The simple and KPI gauge types always show the value text.
  - **Font.** Change the typeface, font style, size, and color of the value text as it displays in the gauge. When using the simple gauge type, you can also leave the **Enable font autosize** checkbox selected to have the value text automatically resize to fill the inside of the gauge, or clear the **Enable font autosize** checkbox to set a consistent font size for the value text.

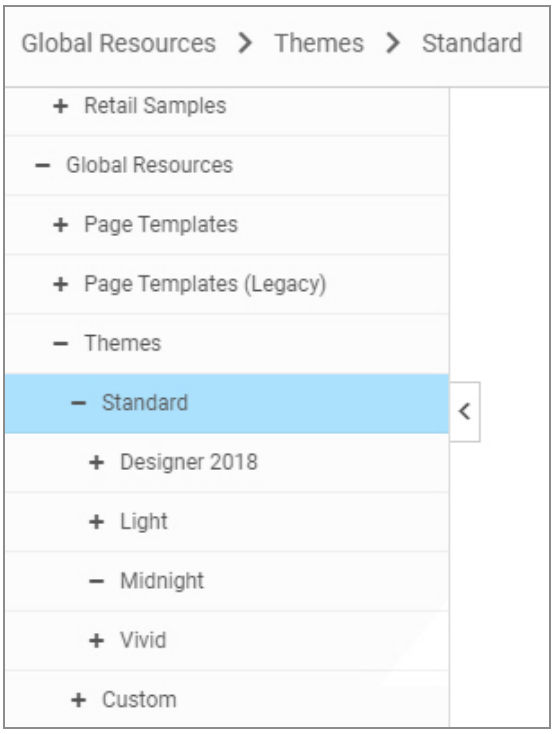
Adding a Theme to a Chart

A theme is used to determine the coloring and hues that display in the charts you configure using WebFOCUS Designer. For example, the default border color and chart colors are determined by the theme.

When creating stand-alone content, the default theme is Designer 2018. When you turn the visualization into a page by adding a second new content item, the theme used for the chart is applied to the page. When you add items to the page, either by creating them or adding them as external content, the page theme is used as the default for all content items. You can then change the theme for each individual item.

You can use one of the themes included with WebFOCUS, or you can create your own theme. For example, you may want to apply a corporate standard theme to your chart. You can add and change themes to suit your requirements (for example, branding).

Available themes that are called by WebFOCUS Designer are located in the Themes folder in the Global Resources area, accessible from the Workspaces tab of the WebFOCUS Hub or Home Page, as shown in the following image. Custom themes can be added to folders within the Custom folder.



Supported formats for themes include .css and .sty. A .css theme file is used to style a page, while .sty file is used to style content such as charts and reports. When files called theme.css and theme.sty are placed into the same folder in the custom themes folder of the Global Resources area, they are available for selection in WebFOCUS when editing page components and content items. The two files are associated, so when the .css theme file is applied to a page, the associated .sty theme file is applied to new content in that page, by default. Similarly, if you select a theme for a chart, which uses the .sty file, then when you convert to a page, the associated .css file is used as the default page theme.

You can develop your own theme using the WebFOCUS text editor and then access it in WebFOCUS Designer. You can customize the .sty theme file used for charts and reports by specifying a set of default property values in it. For information on the properties that you can use in the theme to style a chart, see the *Creating HTML5 Charts With ibi™ WebFOCUS® Language* PDF.

Tip: : You can use the code from an existing theme as a model when creating a new theme.

Note: Charts and reports created for use on pages can use a transparent background to allow the defined background color of the page containers to show through. Since the themes used for charts and reports (.sty files) can be associated with themes for pages (.css files), you can coordinate the background, text, and element colors used in both themes to create content with unified styling. At design time, the page theme associated with the chart or report theme is used for the canvas background. This is for visibility purposes only, and shows how the chart or report appears when added to a page with the associated theme. The stand-alone chart or report does not include this background.

If a chart or report is run stand-alone instead of being added to a page, the run-time view displays a white background only. This means that if, to display on a dark colored page, the font color in the selected theme is defined as white and uses a transparent chart background, then the text is not visible on the white preview background. An example of such a theme is the Midnight theme, provided as one of the default themes in the Global Resources. To view the white text, build your chart or report on the canvas, add it to a page container with a dark background, or change the chart background color from the Format tab. Note that a non-transparent chart background is layered in front of the panel background when the chart is part of a page.

Add a Theme to a Chart

You can add a theme to a chart to color the background and components of your chart. If the chart is in a page, the default theme is the one used in the page. If the content is stand-alone, so that there is no page from which to inherit the theme, the default theme is called Designer 2018.

Procedure

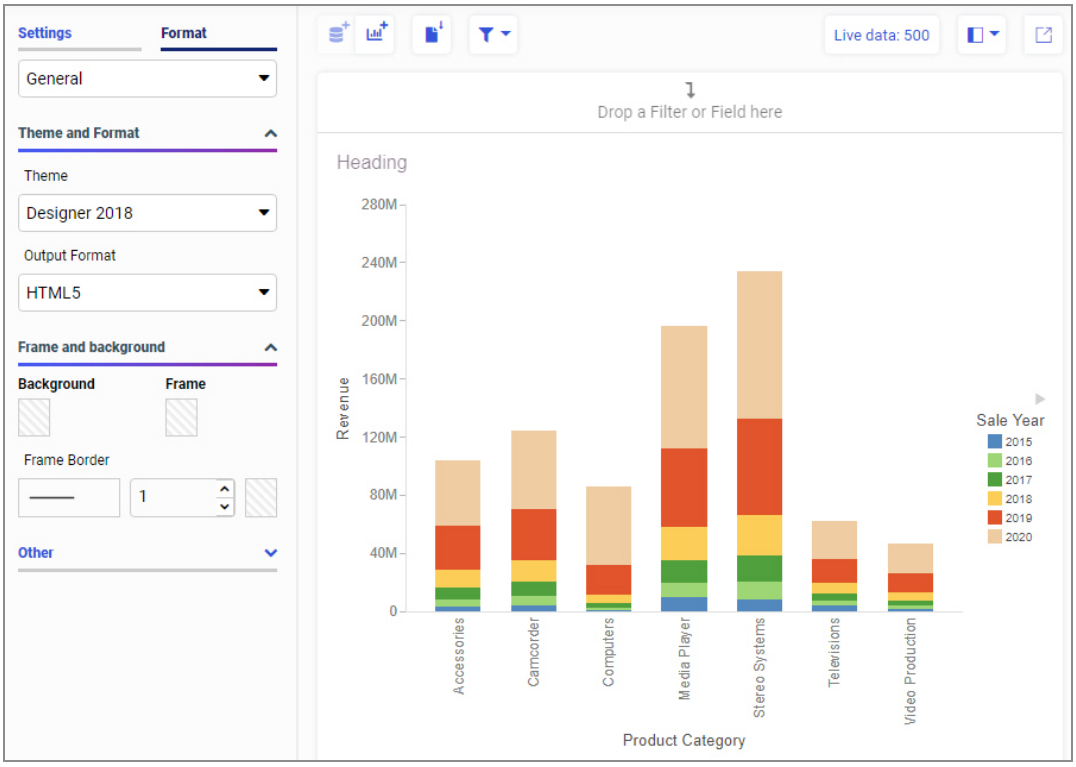
1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

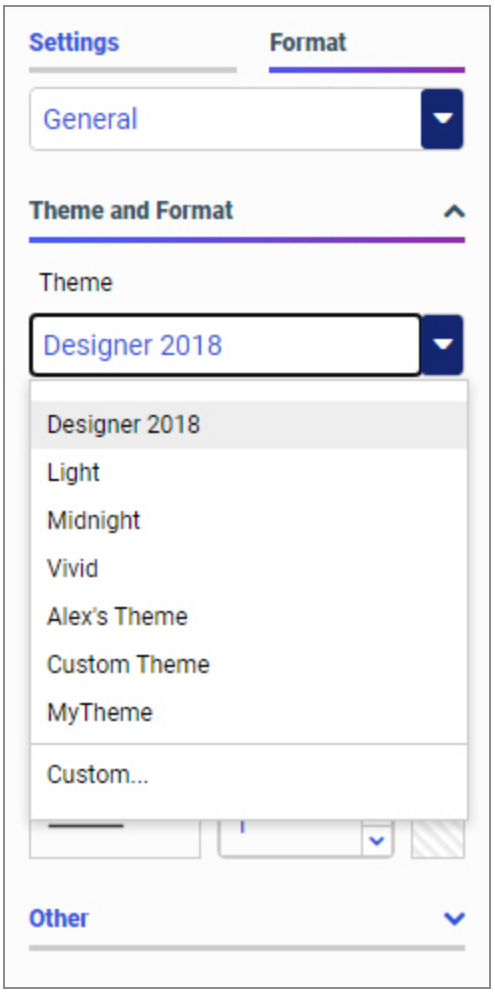
   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

If you start creating content without changing the theme, the default theme is used, as shown in the following image.



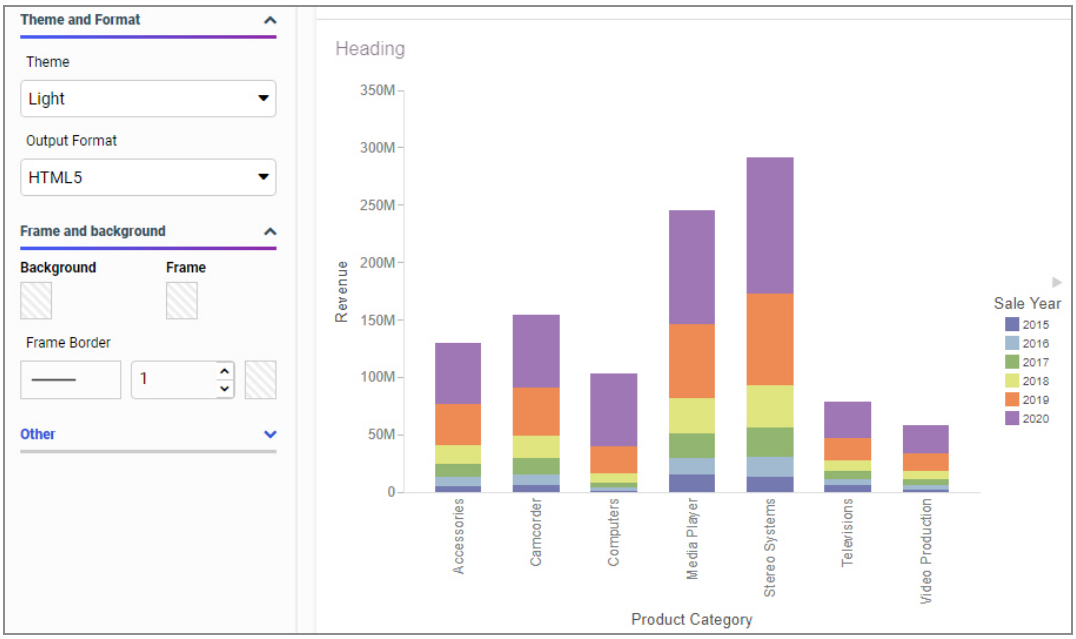
3. On the Format tab, with the General option selected from the quick access menu, in the Theme section, open the Theme dropdown menu.

   A list of available themes is displayed. As shown in the following image, you can choose from the Designer 2018, Light, Midnight, and Vivid themes that are included with WebFOCUS, a custom theme added to the Global Resources area, such as the themes Alex's Theme, Custom Theme, or MyTheme shown in the image, or click **Custom** to select a legacy theme or a theme saved to a workspace folder.



4. Select another theme from the list (for example, Light) to change the theme.

   The color of the background and chart components changes based on the selected theme, as shown in the following image.



5. Click **Convert to page** on the Visualization toolbar to transform the chart into a page and move it into a container.

   The visualization transforms from a single content item into a page. Notice that the page adopts the theme that was used for the original content item. Additionally, the content item now has a theme of **Inherit Page Theme**, so that if you change the theme of the page, the theme of the content item changes along with it.

6. Add fields to the new chart to create a second content item. Notice that it also initially uses the same theme as the page.

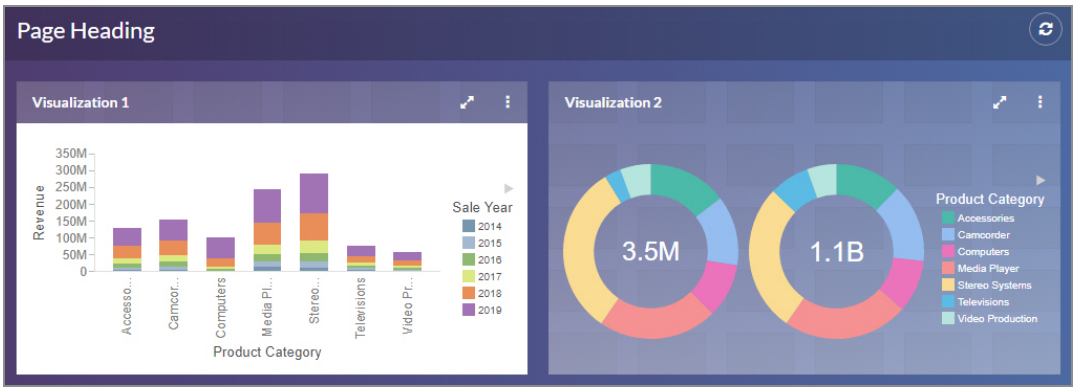
7. Click the page toolbar or select the Visualization item from the outline to select the entire visualization.

8. Click the **Format** tab select a different theme from the Theme dropdown menu, for example, **Midnight**.

   Notice that the theme of both content items is also changed to match the page, since they have a theme setting of **Inherit Page Theme**.

9. Select one of the items on the page and, on the **Format** tab, with the **General** area selected, change the theme.

   The content item whose theme you explicitly set has changed, while the second item, for which a theme was not explicitly selected, still uses the theme used for the page, as shown in the following image.



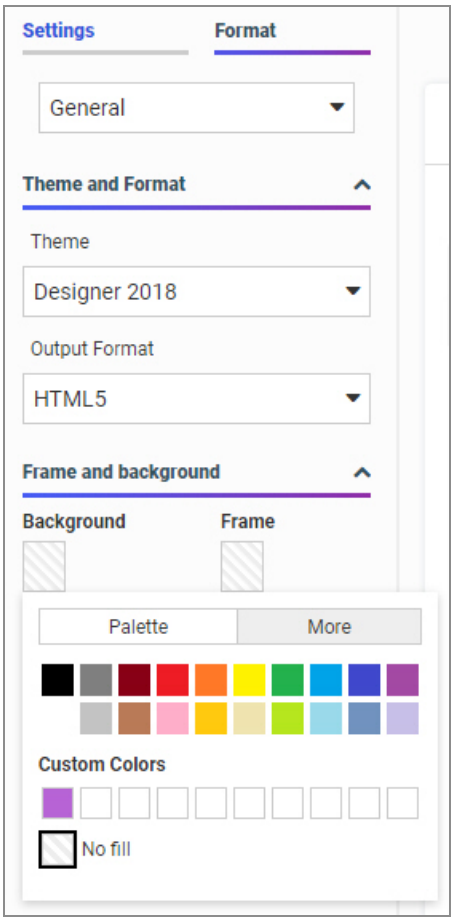
Adding Color to Charts

By adding color to your chart components, you can change the way information is perceived and plays a large role in the effectiveness of your chart.

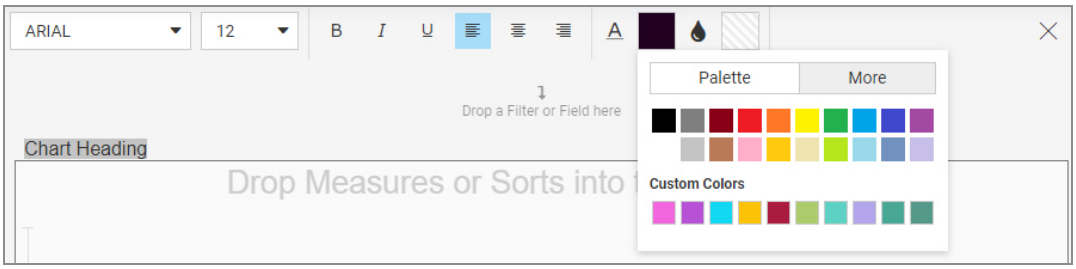
Color adds contrast to your charts, giving you an advantage in presenting unique, well-balanced content. You can use color to highlight a specific aspect or outcome on your chart. WebFOCUS Designer provides a color picker to add color and style your chart.

You can access the color picker in two primary ways: on the Format tab and at the top of the canvas when formatting headers and footers. Using these options, you can change the color of different components to style your chart. You can indicate color values and ranges to highlight data. You can color a chart component (for example, a header or axis), text, or even add colored lines to accentuate the background grid of your data. You can also change the theme, which changes the color palette and background of your chart.

The following image shows an example of color options that display on the Format tab (with the palette exposed), which you also see in other areas where color formatting is supported:

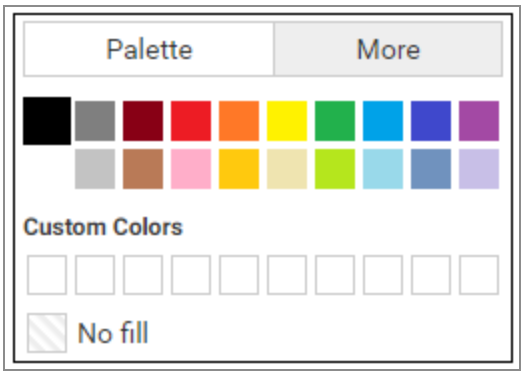


The following image shows the options that display at the top of the canvas (with the palette exposed) when working with headers and footers.



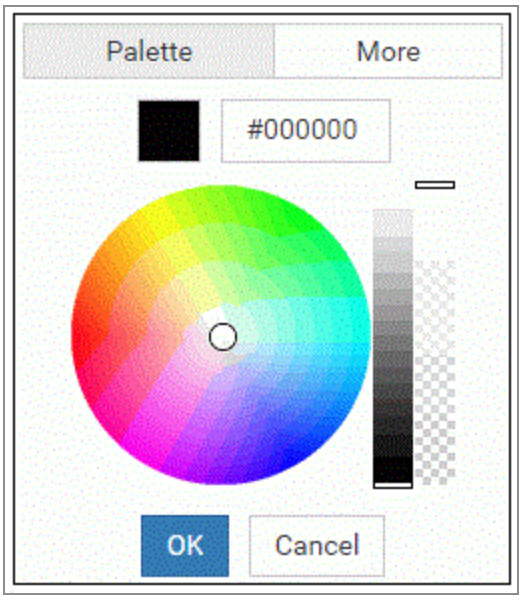
Note: When specifying a theme, you can use the default or specify another one. The colors stored for the theme are part of the underlying .css or .sty file, which contains the color schemes.

In WebFOCUS Designer, the color picker supports a colorspace and a palette-based approach, as shown in the following image.



You can access the color picker from any of the sections on the Format tab. You can also access the color picker when working with headers and footers. When you access the color picker, the color picker displays the Palette tab, by default. From this tab, you can select from up to 20 pre-defined color options. You can also select the **No Fill** option, which displays the selected content as transparent. This is particularly useful in cases where you might want to prevent (or hide) the display of information.

The More tab allows you to choose a custom color by interacting with a hue wheel and the color value field, as shown in the following image.

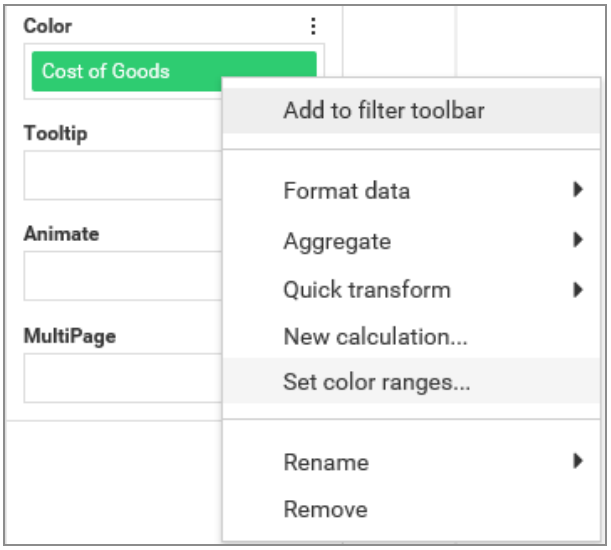


You can specify an exact color code (hexadecimal or HTML) by entering it in the color value field located at the top of this tab, and also specify transparency by using the transparency slider.

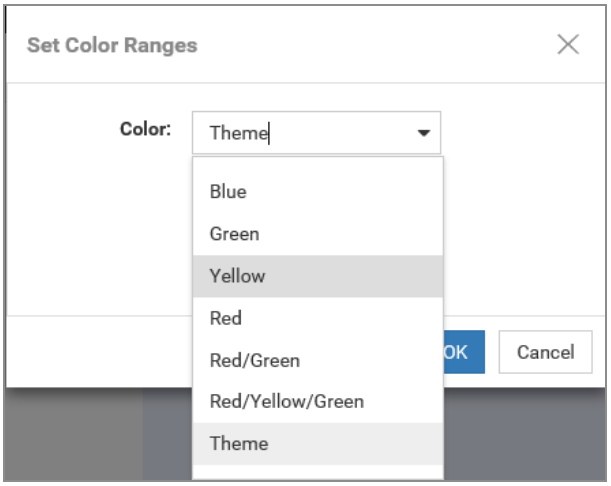
Note: When a custom color is selected and you click **OK**, the color is automatically added to the Custom Colors section in the Palette tab.

You can also set a color range for a measure in your chart. This allows you to specify hues or ranges of color for use in your chart. In cases where Theme is not selected, the color specification overrides what is available in the theme. The color that you select dictates the legend, which in turn displays the various chart components, based on the colors and measurements specified.

To change the color scale options, right-click a measure in the Color bucket and select **Set color ranges**, as shown in the following image.



This invokes a new dialog, Set Color Ranges, where you can select a color range for your chart, as shown in the following image.



When you make a selection, you can override the color schemes that are available from the theme of your chart. Theme is selected, by default. You can select a different color range, such as Green or Red/Orange, from the list of options, which gives you more control over how color is used in your chart to create contrasts between various aspects. For example, if

your chart displays different temperature values using a measure in the Color bucket, you may wish to use the Red/White/Blue option to intuitively show higher temperature values in red and lower ones in blue

If you change the color range to something other than Theme, it is written as inline styling in the .fex file. Inline styling always overrides what is in the StyleSheet because it is listed after it in the .fex file. In this case, the last setting indicates which styling takes precedence. When the color range is set back to Theme, the inline styling is removed so the behavior returns to the theme's settings.

This behavior does not affect your ability to change themes on the Format tab. However, if you change the theme with an inline setting in place, the settings of the Theme is still overridden by the inline settings and the color scale in the legend is not affected. The current procedure only respects the current theme's settings if the color range setting is set to Theme.

In the Set Color Ranges dialog, you can also select **Continuous** or **Discrete** to determine how the color scale is generated. When Continuous is selected, the color scale is a gradient, and each color in the color scale represents a different value. When Discrete is selected, the color scale is divided into segments. Each color in the color scale represents a range of values.

The following image shows a matrix marker chart that uses the Red/Yellow/Green color scale with the Continuous option selected.

The Continuous option creates a more granular color scale, allowing you to see slight differences between similarly colored chart components.

The following image shows the same chart, with the Discrete option selected.

The Discrete option creates identifiable groups based on sections of the color scale.

When using the Theme color scale option, the default color scale type and number of segments in discrete mode are dependent on the values of the colorScale property in the theme that you are using. For example, if 5 colors are listed for the colorScale property in StyleSheet being used as your theme, then 5 colors display in the color scale when the discrete option is used.

Add Color to Your Chart

To add color to your chart:

Procedure

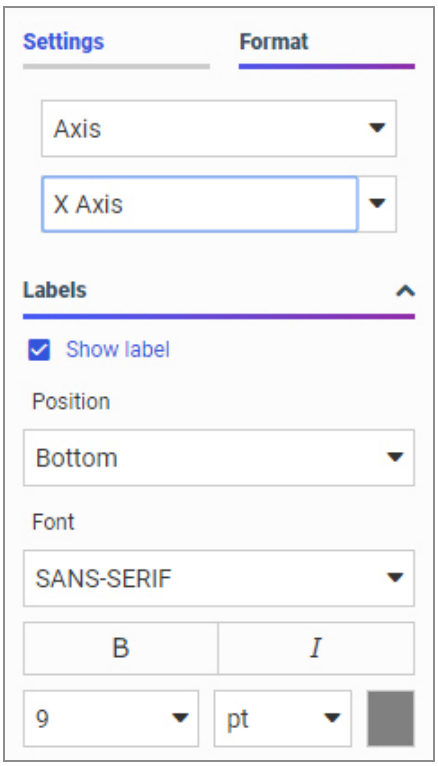
1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

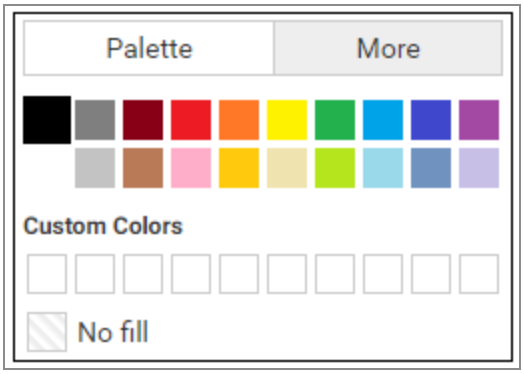
Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Add one or more measures and dimensions to your chart.
4. On the Format tab, expand the quick access menu and then click **Axis** from the dropdown list, as shown in the following image.

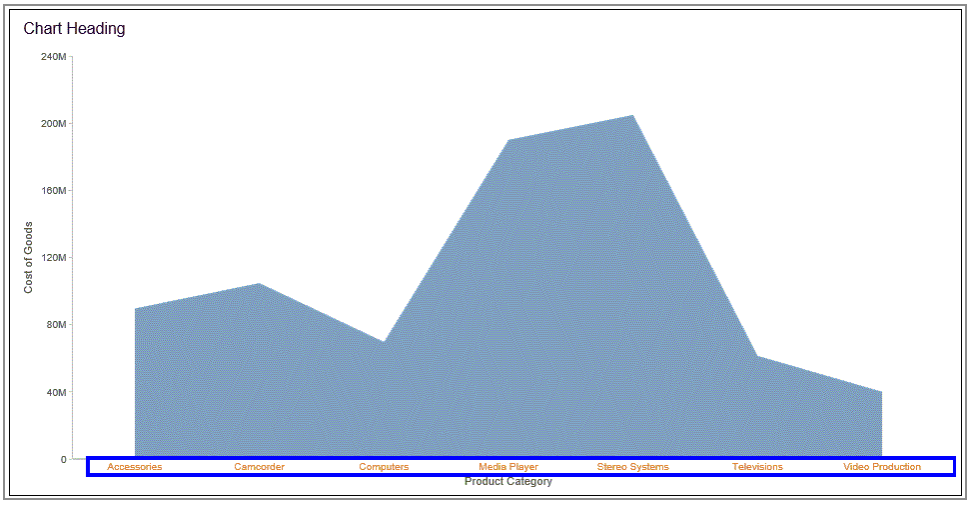


5. In the Font section, click the color sample.

   The color picker displays, as shown in the following image.



The text color that you select is displayed for the values on the specified axis (for example, x-axis), as shown in the following image.



Change the Color Scale in a Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**..

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

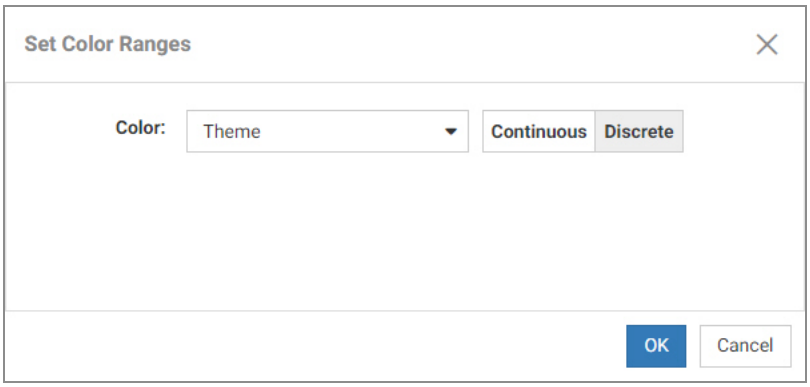
3. Add one or more measures and dimensions to your chart.

4. Add a measure to the Color bucket.

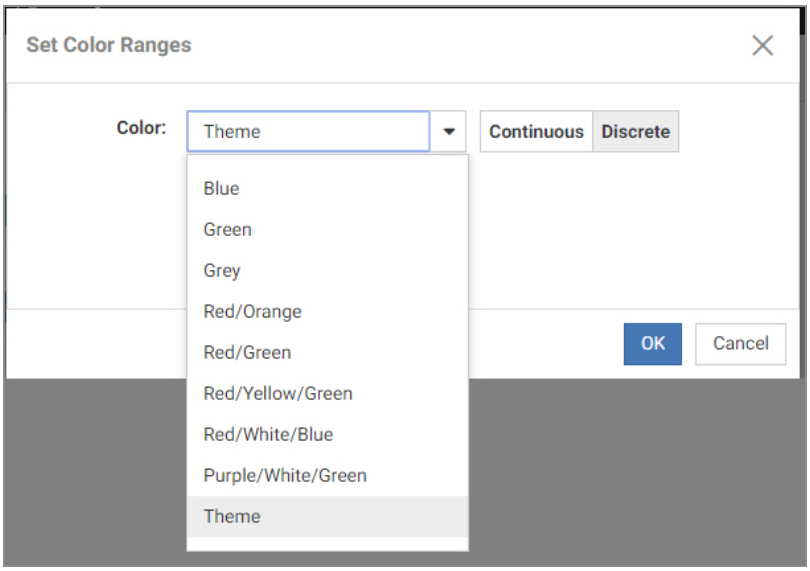
   Many different chart types generate a color scale from the Color bucket. Exceptions include the ring pie and data grid chart types.

5. Right-click the measure field in the Color bucket and click **Set color ranges**.

   The Set Color Ranges dialog displays, as shown in the following image.



6. From the list of colors, select a color range, as shown in the following image.



7. Optionally, select **Continuous** or **Discrete** to determine how the color scale is generated.

   When Continuous is selected, the color scale is a gradient, and each color in the color scale represents a different value.

   When Discrete is selected, the color scale is divided into segments. Each color in the color scale represents a range of values.

8. Click **OK**.

   Note the change in the color and hues in your chart.

Changing the Size of Charts and Risers

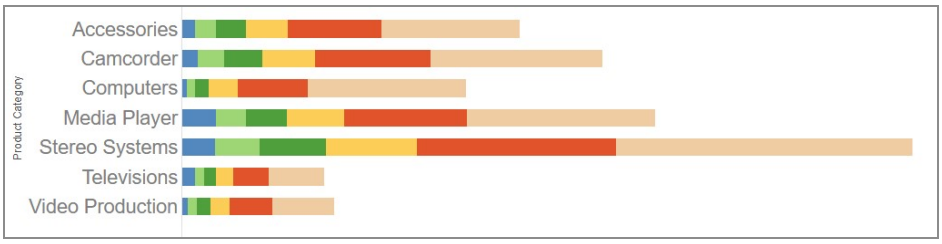
By default, when you create a chart, it fills the frame in which it is run, and risers and other sections within the chart are sized accordingly. This makes the chart flexible, allowing it to run in large and small containers alike without sacrificing the appearance and legibility of the chart. This automatic sizing also means that you do not need to manually set any size properties for the chart.

However, you also have the option to set a consistent size for the chart, if you prefer. You can also determine the width of bars in a bar chart as a percentage of the riser area, and set the width of risers in a bar, area, or line chart, based on the font size of the ordinal axis, or on an exact value that you specify.

You can set a static height and width for a chart, so that it remains the same size no matter where it is loaded. This can be useful, for example, if you want to add the chart to a PowerPoint presentation or PDF, and want to leave room for other content on each slide or page. To set the size of your chart, on the **Format** tab, select **General** from the quick access menu. In the Other section, notice that the Fit to container option is set to **Automatic**, by default, so that the chart automatically resizes to fill its container. To specify a size for the chart, change this setting to **Manual**, and then provide a width and height for the chart, in pixels. As you set these dimensions, you can select the **Lock Aspect Ratio** checkbox so that as you change the width or height, the other dimension changes as well, to maintain the same aspect ratio.

In bar, area, and line charts, values are represented by the height of a bar, area, or line at different points along the ordinal axis, which displays different dimension value labels. These points are generically called risers. You can set the width of these risers to fill the width of the chart, resize them based on the font size of the ordinal axis labels, or resize them manually by specifying a number of pixels.

To access these options, on the **Format** tab, select **Series**, and leave **All series** selected. By default, the riser width automatically adjusts based on the width of the chart to fill it evenly. In the Shape section, change the Riser Width property to **Tie to ordinal font size** to have the riser width increase with the size of the dimension labels on the ordinal axis of the chart. This is most useful in charts that are oriented horizontally, so the risers and labels occupy roughly the same amount of vertical space. To change the font size, on the **Format** tab, select **Axis** from the quick access menu and then select **X Axis** from the axis dropdown menu. The Labels section includes the options to change the font size of the axis labels. In the following image, the font size was increased to 18, and, since the Riser Width property was set to **Tie to ordinal font size**, the width of each riser has also increased accordingly.



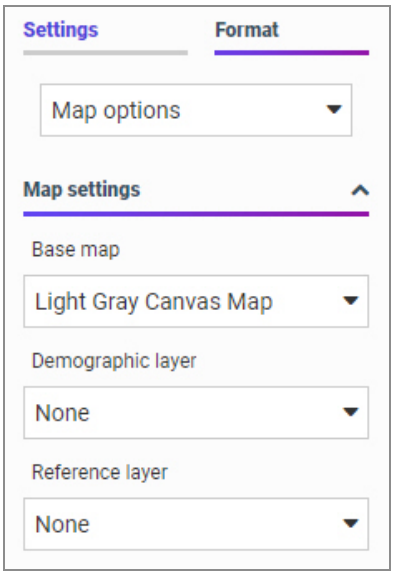
You can also set the width of each riser in pixels. Set the Riser Width property to **Manual** and then use the slider to set the riser width. If the riser width is too wide to fit all risers in the chart frame, a scrollbar is added.

In bar charts, you can also set the percentage of the riser area that each bar or set of side-by-side bars occupies, using the slider for the Riser Spacing property. Reducing this value increases the amount of space between bars.

Creating Maps to Illustrate Trends

You can create maps to identify patterns or trends in your data. By converting data into values that can be displayed on a map, you are able to visualize scenarios, illustrate hot spots, and identify potential problem areas. For example, a law enforcement agency may use mapping functionality to identify areas of higher crime within the locations they cover. You can also use maps to determine how places are related, understand where things are located, and identify the best actions to take. By illustrating trends on a map, a decision maker can identify patterns easily, and reach conclusions sooner.

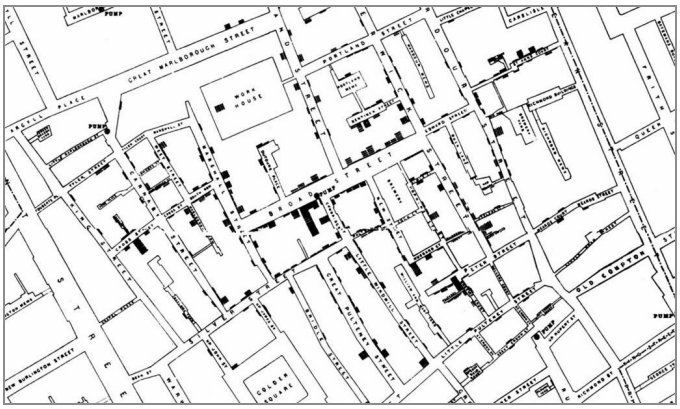
You can access Map options from the Format tab, as a special tab is activated when a map is initiated. This tab is shown in the following image:



You can format maps to display areas of emphasis through the use of demographic and reference layers.

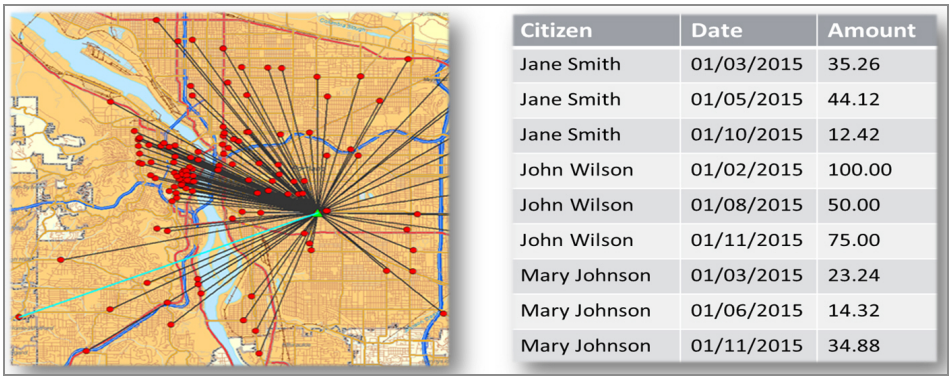
A Brief History of Mapping

An early example of how maps can be used to illustrate trends is the case of Dr. John Snow, an epidemiologist who was one of the first to use data to map occurrences of cholera to find the cause of infection. By plotting the cholera data on a map of a town, Dr. Snow was able to visualize a trend that showed higher incidences of cholera closest to water pumps. This example is shown in the following image.



Maps also allow you to measure size, shape, and distribution to detect and quantify patterns, and even perform predictive analytics. An example of how maps can help detect and quantify patterns is the scenario in which a state agency used a mapping application to solve a problem with their food stamp system. Using this application, odd food stamp

redemptions, such as rounded numbers transactions, were discovered. By plotting those transactions on a map, the agency discovered that the redemptions appeared in the same geographic location. Upon further investigation, the agency identified that individuals were selling their food stamps at reduced prices, $50 worth of food stamps for $40 in cash, to others instead using them as intended. This map example is shown in the following image.



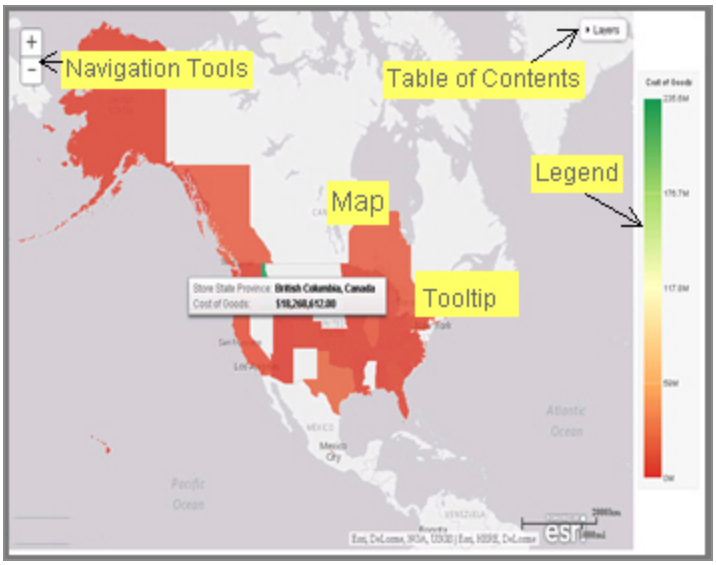
Citizen	Date	Amount
Jane Smith	01/03/2015	35.26
Jane Smith	01/05/2015	44.12
Jane Smith	01/10/2015	12.42
John Wilson	01/02/2015	100.00
John Wilson	01/08/2015	50.00
John Wilson	01/11/2015	75.00
Mary Johnson	01/03/2015	23.24
Mary Johnson	01/06/2015	14.32
Mary Johnson	01/11/2015	34.88

When working with maps, the concepts of location intelligence and business intelligence are important to understand. A Geographic Information System (GIS) captures, stores, analyzes, manages, and presents data linked to a location, while Business Intelligence (BI) relies on the conversion of raw data into meaningful information. Location intelligence is the process of analyzing data to make better business decisions. It combines GIS and BI/Analytics to allow the recognition of patterns in your data, including the visualization and discovery of geospatial outliers, which would not be easily discovered if you use the technology independently and separately.

More specifically, maps use non-intrusive GIS workflows with existing data. You can view symbol layers for data-bound to a geo-location, such as state, country, and ZIP code, in an integrated map viewer. Using metrics from your data, you can also visualize geographic roles or dimensions. Geographic roles, or dimensions, can be built directly into your Metadata or assigned to a data field when you create a map.

ibi WebFOCUS Designer and Esri Integration

Using WebFOCUS Designer with the Esri integration, you can create maps that help you illustrate or identify trends so you can take action quickly. WebFOCUS architecture provides the framework in which this system operates. Using a JavaScript map viewer, you can navigate the interface easily, as shown in the following image.



In addition, this integration utilizes the capabilities of Esri by leveraging the ArcGIS JavaScript API and content. Specifically, you can integrate data into maps with published content in ArcGIS Online platform. For more information, see http://www.esri.com/software/arcgis/arcgisonline. Additionally, by using this integration, you can include information about demographics, spending habits, crime, and lifestyle to maps that contain your data. These maps include layers with extensive demographic or reference detail and topography and allow you to view information about people, businesses, climate, and much more.

You can create the following maps in WebFOCUS Designer:

- **Choropleth.** A common thematic map that uses geographical measures (for example, states and countries), representing the values aerially while employing a varying intensity of colors. It is useful for visualizing location-based data, trends, and distributions across a geographic area. The color hues for Choropleth maps are dictated by the legend, based on the selected measure, enabling you to determine data concentration across your map.
- **Proportional Symbol (Bubble).** A map that represents coordinates, such as an address or intersection, using symbols of different sizes to represent any measure. These maps focus on specific areas, for which data concentrations may vary. When the data concentration is larger, the bubble is bigger.

In addition, built-in zooming capabilities allow you to drill down to a specific geographic area of focus easily. This allows you to get a closer look at regional or local data, draw inferences, and make recommendations, without changing the initial view of your data.

Using the Esri integration in WebFOCUS Designer, you can also add the following layers to your map:

- **Base map.** Display a layer that positions data as it is located, in context to other geographical features, such as streets, terrain, and imagery. Some standard Background options may combine road, aerial, and topographic data using a variety of symbols. Hosted on ArcGIS, you can change your background at any time, to review your data in a different context.

  When you apply a Background to your map, its appearance changes. You can then adjust the view of your data, showing different terrain or geographical views. Base maps provide at least 17 levels of zoom. For more information, see https://developers.arcgis.com/javascript/jsapi/esri.basemaps-amd.html.

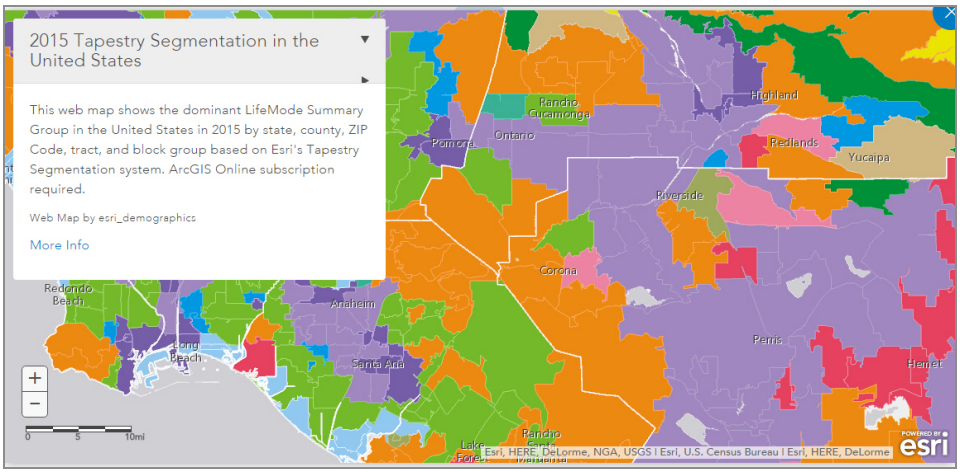
  The basemap options include:

  - Light Gray Canvas Map
  - Dark Gray Canvas Map
  - World Imagery with Labels
  - National Geographic World Map
  - Oceans Map
  - Open Street Map
  - World Imagery
  - World Street Map
  - Terrain with Labels
  - World Topographical Map
- **Reference Layers.** Display a layer of boundaries and locations that range from a continental scale to country, state, and even local neighborhood. For example, if you are viewing World data on electricity usage, you may want to add a Reference Layer that displays the borders and concentration of your data within each country.
- **Demographic Layers.** Display a layer of information about people and businesses in a specific demographic area. This includes the United States and 120 other countries. Demographic Layers are thematic maps that provide additional information about the location, such as spending habits, population, and lifestyles. You can add Demographic Layers to a map about sales data, to identify new locations for stores, based on the spending habits for a specific area.

Both mapextent and the Layers menu functionality are applied to your map when you select a Base map, Reference Layer, or Demographic Layer. Mapextent is an automatic view

of the map. Layers is a menu that appears on the map and provides access to options that allow you to adjust the information that is being displayed.

The map example in the following image shows the use of layers.



Note: Demographic Layers and Reference layers can be accessed from the Add Content Layers button, and basemaps can be accessed from the Map Properties panel. These layers are static, standard options available from Esri, and do not change based on the data source that you select.

ibi WebFOCUS Server Adapter for Esri ArcGIS Configuration for Demographic Layers

For demographic layers to draw, you must configure the WebFOCUS Server to enable them. Some features, such as demographic and reference layers that require authentication and certain simplified geography functions, may additionally require a refresh token. You can acquire the refresh token using your Esri ArcGIS credentials.

Configure the Adapter for Esri ArcGIS to Enable Demographic Layers to Draw

Procedure

1. From the plus menu of the WebFOCUS Hub, or from the WebFOCUS Home Page, click **Get Data**.
2. On the Get Data page, double-click **New Data Source**.
3. From the list of adapters, double-click **ESRI ArcGIS**.

   The Add Connection for Esri ArcGIS panel opens.

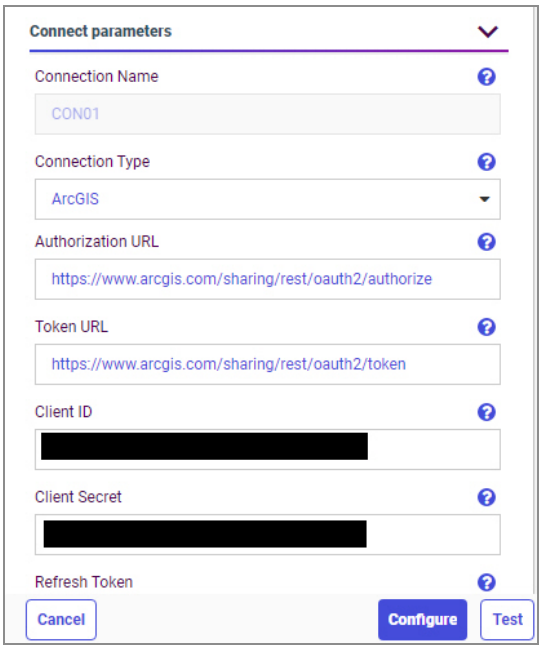
   > **Note:** To find the Esri ArcGIS adapter option more easily, select **GIS** from the Available dropdown list, or use the search box.

4. Basic connection parameters for this adapter are supplied automatically. To access secured Esri ArcGIS features that require named authentication, configure the Adapter for Esri ArcGIS with a refresh token.

   Click **Get Refresh Token**. The Esri ArcGIS Sign In page opens. Type your username and password, and then click **Sign In**.

   You are returned to the Add Connection panel.

5. In the Add Connection for Esri ArcGIS panel, click **Configure**, as shown in the following image.



   Once this is configured, ESRI ArcGIS is added to the Get Data page.

Configuring an Esri On Premise Environment

The Esri On Premise functionality enables you to download and access mapping files through the use of a local Application Programming Interface (API). Once you download and configure the API, you do not need an internet connection to utilize the robust mapping features that Esri provides. For information on downloading and configuring the API that controls this feature, see Download and Configure the ArcGIS JavaScript API.

The Esri On Premise functionality provides you with local access to Esri mapping files. This is particularly useful if you are away from your office or without an internet connection. You may also be using a mobile device, such as an iPad or smartphone with a large screen, without an internet connection. The following mapping components are supported when using the Esri On Premise functionality:

- **Offline Basemaps**. Basemaps are an offering from ArcGIS. Standard basemaps are provided for your use offline. For example, there is an Oceans basemap and a Terrain with Labels basemap. These basemaps are also known as backgrounds. In an online setting, there are 10 basemaps available. In order to use offline basemaps you need to use a tiled mapservice published in the ArcGIS Server.
- **Offline Geographic Roles**. Geographic Roles are used to visualize measures with commonly known dimensions (for example, Country, State, Cities). These provide the location information often in the form of (x/y) needed to plot on a map. Geographic roles are pre-defined for online users through ArcGIS Online. A geographic role defines the geographic component that you can select when creating a map (for example, State or Continent). For an offline user, the options that display can be customized in the geoservices.xml file. For more information, see Adding a Custom Geographic Role.

Note:

- Demographic Layers are not supported in an Esri On Premise environment.
- ArcGIS API version 3.x is retired, any map created in the 3.x version should be reopened and saved in Designer to use version 4.x. For more information, see https://www.esri.com/arcgis-blog/products/js-api-arcgis/developers/arcgis-api-for-javascript-version-3-x-retirement/

Download and Configure the ArcGIS JavaScript API

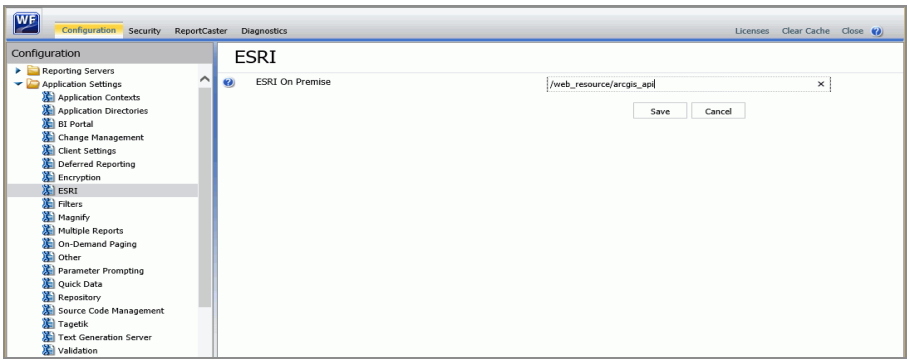
You can use this procedure to download and configure the API that controls the Esri On Premise environment.

Procedure

1. Sign in to Esri ArcGIS.
2. In your browser, navigate to the following URL to download the API: https://developers.arcgis.com/downloads/#javascript
3. Navigate to Version 3.28 of the ArcGIS API for JavaScript, as shown in the following image.

4. Click **arcgis_js_v328_api.zip** to download the API.
5. In *drive*:\ibi\WebFOCUS*nn*\config\web_resource, create a folder named arcgis_api.
6. Open the arcgis_js_v328_api.zip file downloaded in step 4 and navigate to arcgis_js_v328_api\arcgis_js_api\library\3.28\3.28.
7. Extract the files in that folder to the *drive*:\ibi\WebFOCUS*nn*\config\web_resource\arcgis_api folder.
8. Next, verify the path to the API in the Administration Console, as shown in the following image.

> **Note:** This is the path to which you extracted the API files. For example, */web_resource/arcgis_api*.



This field identifies the path to the internal ArcGIS Javascript API Source that develops ESRI-based maps. This setting is blank, by default, indicating that the use of the internal API source to develop ESRI maps is not activated. The API that is referenced is https://js.arcgis.com/3.28/, by default. To direct WebFOCUS Designer to use the internal ArcGIS Javascript API to develop ESRI maps, enter the path to the local API files that you extracted into this setting. For more information, see the *ibi™ WebFOCUS® Security and Administration guide*.

> **Note:** This path should be a relative path that is accessible within the local install.

9. Click **Save**.
10. Next, open the following two local API files in a text editor:
    - *drive*:\ibi\WebFOCUS*nn*\config\web_resource\arcgis_api\init.js
    - *drive*:\ibi\WebFOCUS*nn*\config\web_resource\arcgis_api\dojo\dojo.js

    In both files, search for HOSTNAME_AND_PATH_TO_JSAPI to locate the baseUrl property. Replace the string *[HOSTNAME_AND_PATH_TO_JSAPI]* in *baseUrl:"https://[HOSTNAME_AND_PATH_TO_JSAPI]dojo"* with the path to your on-premises ArcGIS server. For example:

    ```
    baseUrl:"https://localhost/arcgis/jsapi/jsapi/dojo"
    ```

11. In the Administration Console, click **Clear Cache** to clear the browser cache. Your configuration is complete.

Creating and Customizing Maps in ibi WebFOCUS Designer

The following procedures provide step-by-step instructions on how to create and customize maps.

As you create your maps, you can use the following built-in map viewer features:

- You can use the plus (+) and minus (-) symbols, , within the map to zoom in and out of different areas of the map. You can also click your left mouse button to zoom in to a specific location.
- Like all HTML5 visualizations, the highlighted markers and regions on a map support drill, multi-drill, auto-linking, and informational tooltip features.
- You can use the Pan / Selection button to alternate between the Pan and Selection controls. This option is in the upper-right corner of the map.
- Creating a map chart using the US Zipcode 5 Georole with more than 2000 polygons fail to draw.

Create an Esri Choropleth Map

Note: The default option of creating a map utilizes the ArcGIS JavaScript API that Esri provides.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

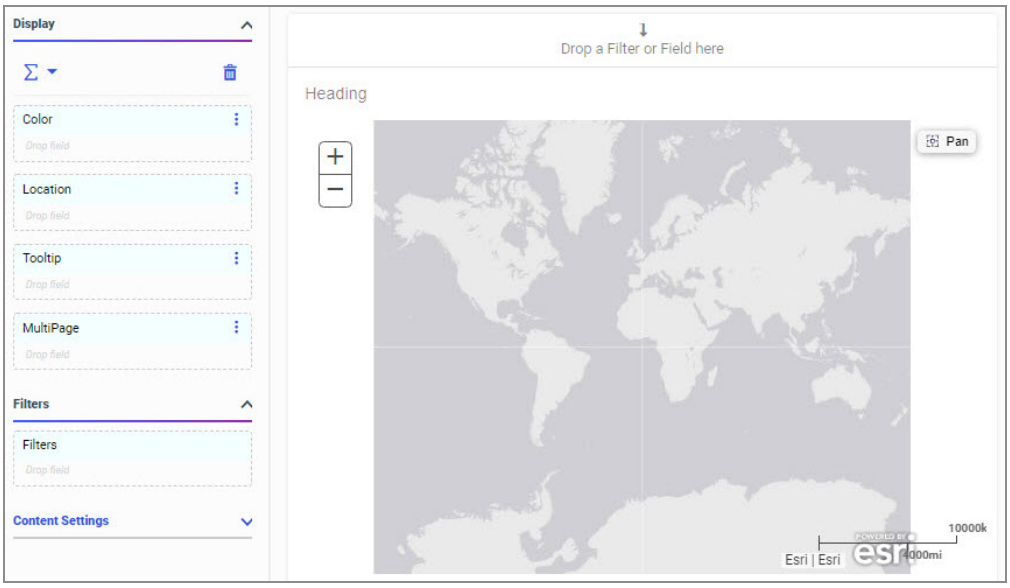
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, select the Choropleth map chart type.

   A blank map displays and the Location bucket is enabled, as shown in the following

image.



4. Add a Geolocation field to the Location bucket.

   This field, which already has a geographic role assigned, is denoted with a Location icon, , in the Resources panel.

   The canvas refreshes, and your map displays.

5. Before saving your map, to add insight, you can also do the following:

   - Click **Run in new window**, to see a run-time view of your map.
   - Add a measure or dimension to the Color bucket, to color your chart by that underlying data value. When you add a dimension field to the Color bucket, a legend displays for the values in that field. Note that each area in a choropleth map can only display one color at a time, so it may be preferable to use a dimension for which each geographic area returns a single value. If you specify a measure in the Color bucket, a color scale is generated.
   - Add a field to the Tooltip bucket, which displays tooltip information when you place your mouse over an area of the map.
   - Add a Base map, Demographic Layer, or Reference Layer from the Format tab, under Map options.

6. Click **Save** to save your map.

Create an Esri Proportional Symbol (Bubble) Map

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

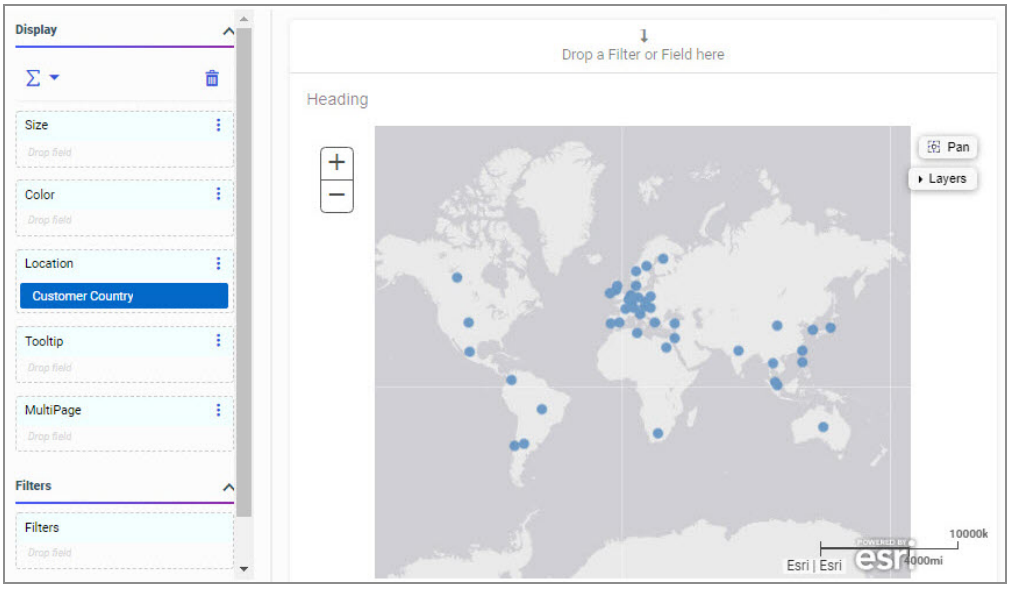
3. On the Content picker, select Proportional Symbol for the map type.

   A blank map displays and the Location bucket is enabled.

4. Place a data field with a defined geographic role in the Location bucket.

   This field, which already has a geographic role assigned, is denoted with a Location icon, , in the Resource panel.

   A basic bubble map displays, as shown in the following image.



5. Before saving your map, to add insight, you can also do the following:

   - Click **Run in new window**, to see a run-time view of your map.
   - Add a measure or dimension to the Color bucket to color your chart by that

underlying data value. Adding a dimension creates a legend with a different color assigned to each value. Adding a measure generates a color scale.

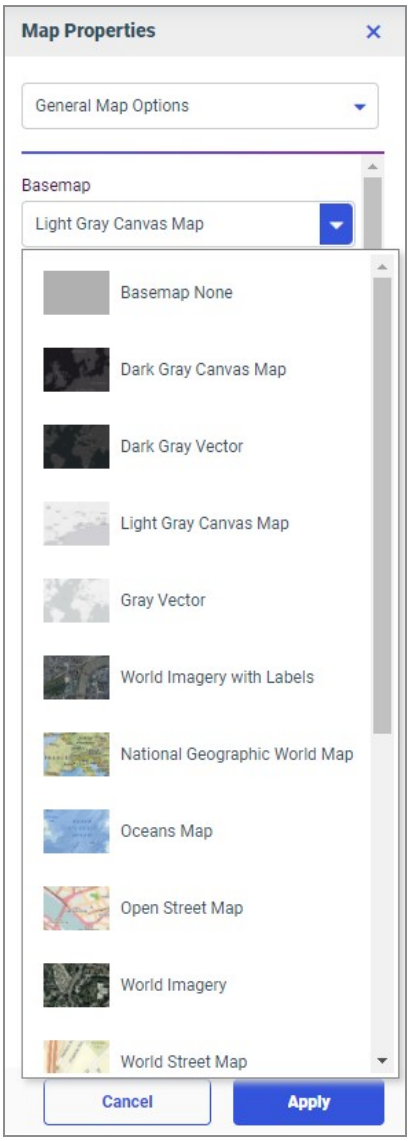
- Add a measure to the Size bucket, to control the size of the bubbles on your map.
- Add a field to the Tooltip bucket, to display tooltip information when you place your mouse over an area of the map at run time.
- Add a Resources Panel, Demographic Layer, or Reference Layer from the Format tab, under Map options.

6. Click **Save** to save your map.

Change the Default Background of a Map

Procedure

1. Create a new map or open an existing map.
2. Click the **Map Properties** button.
3. In the Map Properties panel, open the Basemap menu and choose from the available options, as shown in the following image.



4. Select one of the following options:
    - Basemap None
    - Dark Gray Canvas Map
    - Dark Gray Vector
    - Light Gray Canvas Map
    - Gray Vector
    - World Imagery with Labels

- National Geographic World Map
- Oceans Map
- Open Street Map
- World Imagery
- World Street Map
- Streets Navigation Vector
- Streets Night Vector
- Streets Relief Vector
- Streets Vector
- Terrain with Labels
- World Topographic Map
- Topographic Vector

Note: Custom configured basemaps also appear as options.

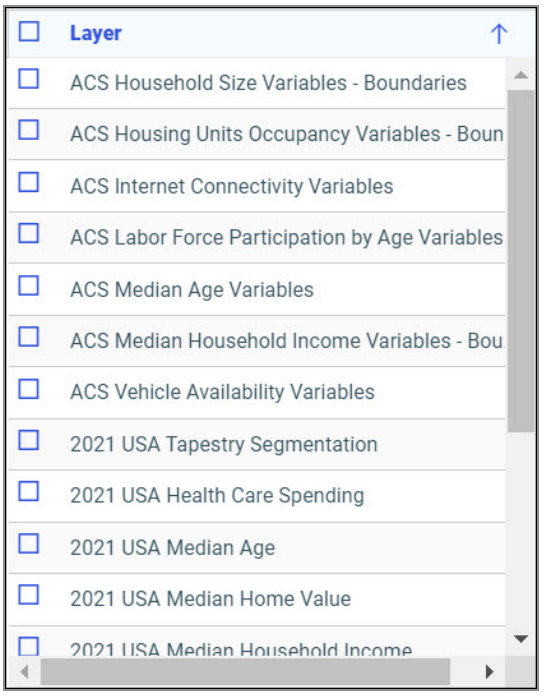
Vector basemaps can be more detailed than default raster tile basemaps, but may not be compatible with all environments or basemap styles. For some basemaps, both default raster tile and vector options are available.

Once you make a selection, the background of the map refreshes. You can continue to change your background until it displays the desired information.

Adding Demographic Layers to a Map

Procedure

1. Create a new map or open an existing map.
2. Click **Add Content Layer(s)** to add a new content layer.
3. In the Add Content Layer(s) dialog, on the Demographic tab, select from various population and lifestyle groups, as shown in the following image

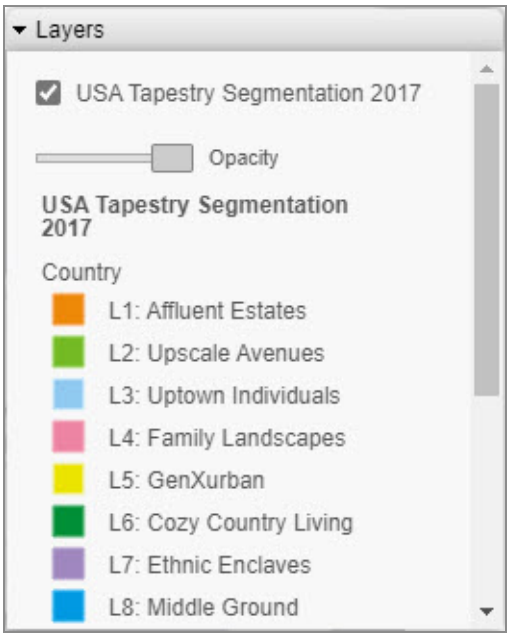


Note: These are pre-defined demographic profiles, provided by Esri ArcGIS. Esri periodically retires older demographic layers.

You can select multiple options in either category to gain additional insight into your data. Specifically, each Demographic Layer has its own profile and provides a layering option, when comparing values across different layers or profiles.

4. Once you select the demographic layers in the list on the left that you want to use, click **Add >** to add them to the selected list on the right.
5. Click **Add** to add the select layers to the map.

   The Demographic Layers that you select are rendered on the map. The legends for each layer, if they are available, display in the Layers list at run time. The Layer list with a configured demographic layer is shown in the following image.



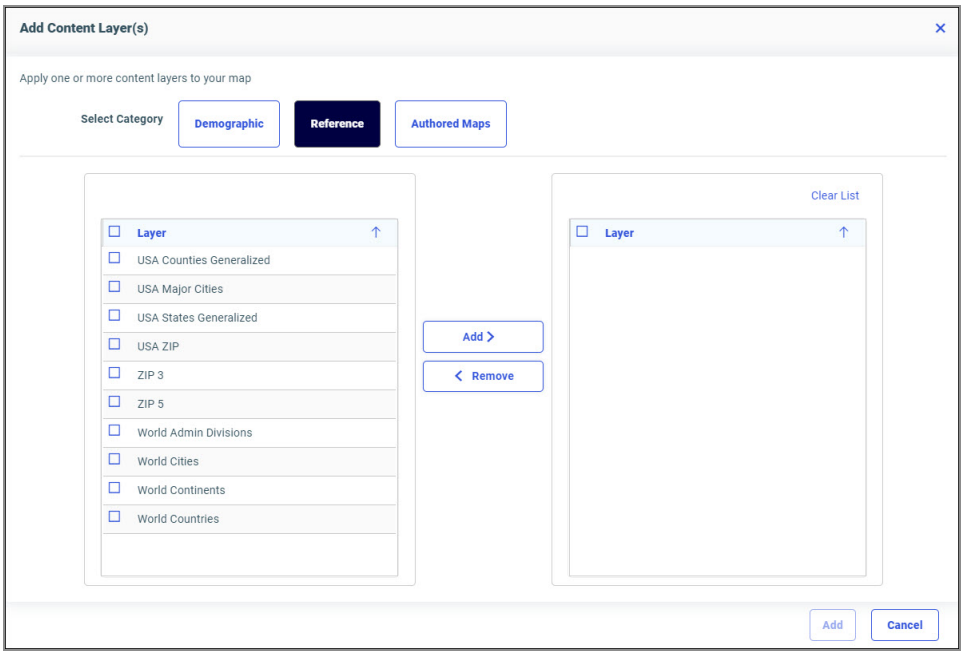
You can select and clear the checkboxes to enable the display of one or more Demographic Layers to compare and contrast the different demographic scenarios.

Note: Layers that require a special layerTypeEx property in the addon_json when configured, are not supported in the com.esri.map extension. InfoAssist uses the com.esri.map extension.

Adding Reference Layers to a Map

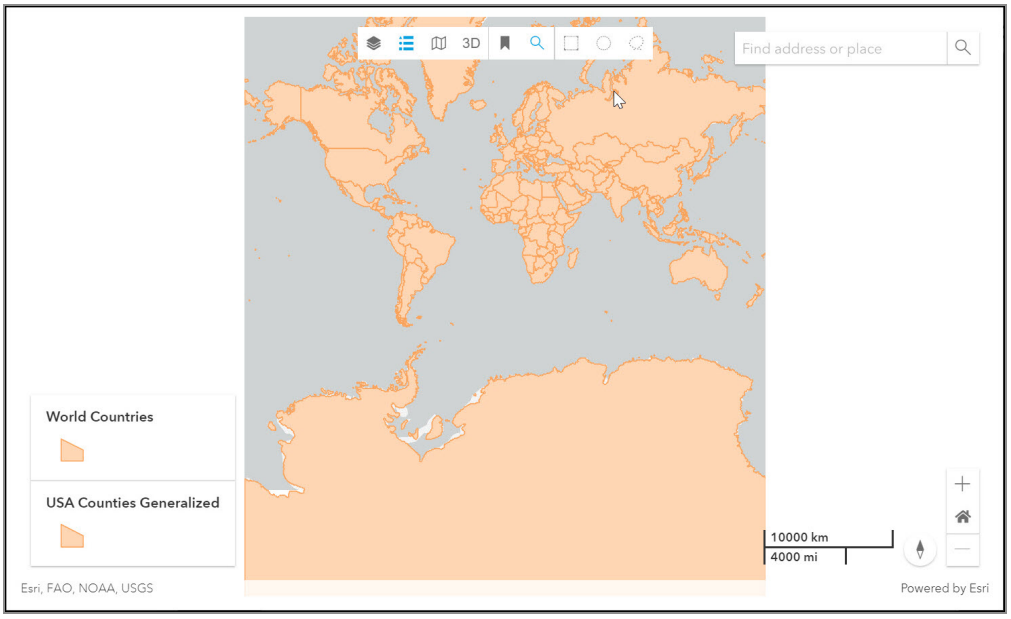
Procedure

1. Create a new map or open an existing map.
2. Click **Add Content Layer(s)** to add a new content layer. In the Add Content Layer(s) dialog, select the **Reference** tab, as shown in the following image.



Select the reference layers that you want to use from the list on the left, and click **Add >** to add them to the selected list on the right. Click **Add** to add the selected layers to the map.

Your map refreshes, and the definitions and borders of the References Layers display on the canvas. You can use the Table of Contents or Layers option, to toggle different Reference Layers in your map. These options are shown in the following image.



Note: To make a map layer available in the Authored Maps list, right-click the layer in Designer and click Save Layer. This saves a stand-alone map layer outside the multi-layer map.

Query Buckets by Map Type

This section presents the Query buckets that display, by map type.

Query bucket	Choropleth Map	Proportional Symbol Map
Location. One data field, specifically a field containing location data (for example, State).	✓	✓
Color. One data field.	✓	✓
Tooltip. One or more data fields (not required).	✓	✓
Multi-page. Up to one data field (not required).	✓	✓
Size. One data field.	✗	✓

Geographic Roles

Geographic roles have been unified to access 58 world administrative boundaries down to the postal code level, out of the box. You can access administrative boundaries for approximately 250 countries with a second level license, which is a paid service from Esri.

Enter your second level license code by clicking the License button on the ribbon.

Note: Geographic roles are only available with Esri maps.

This section contains information on the geographic roles that are supported for Esri maps.

Geographic Role	Description	Maps Supported
CONTINENT	World Continents	Choropleth, Proportional Symbol
COUNTRY	World Countries	Choropleth, Proportional Symbol
STATE	World Admin Divisions	Choropleth, Proportional Symbol
CITY	World Cities	Proportional Symbol
COUNTY	World Counties	Choropleth, Proportional Symbol
POSTAL-CODE	Postal Code	Choropleth, Proportional Symbol

Note: This is a new, simplified list of geographic roles (dimensions) that you can utilize when creating a map chart. This unified list of roles provides worldwide mapping of administrative boundaries down to the postal code level. In WebFOCUS Designer, the new roles display, by default, when assigning a geographic role.

The following table illustrates the geographic roles and their dependencies. Level 1 indicates the highest level of hierarchy and level 5 is the lowest level of hierarchy.

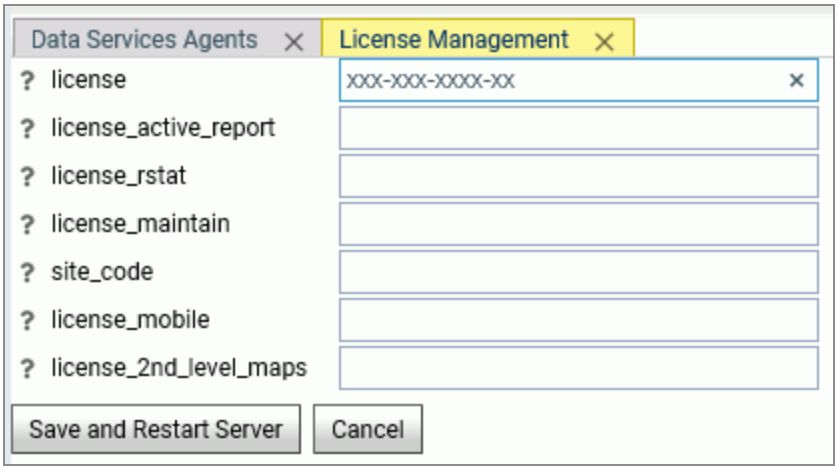
Region	Hierarchy Level	Geographic Role
World	1	CONTINENT
	2	COUNTRY
	3	STATE
	4	CITY
	5	POSTAL CODE

Access Second Level Licensed Geographies for Esri Maps

Procedure

1. Click **Workspace** on the WebFOCUS Reporting Server Web Console sidebar.
2. Click **License** on the ribbon.

   The License Management pane opens, as shown in the following image.



3. Enter your Esri second level license code in the **license_2nd_level_maps** field.
4. Click **Save and Restart Server**.

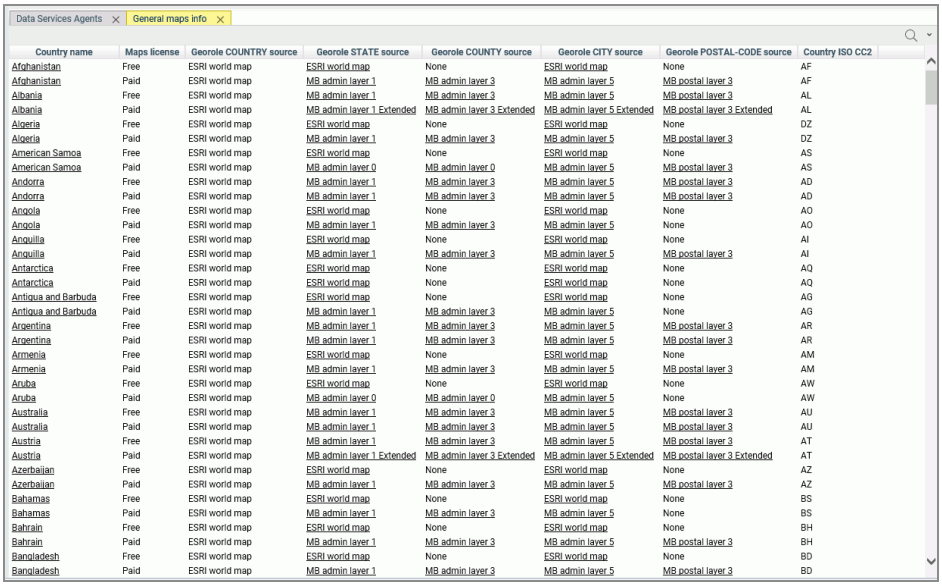
Result

Once the second level license is enabled, you can use the standard administrative and postal geographic roles to access these additional geographic boundaries.

> **Note:** The server must be configured for Unicode if Unicode characters exist in the data.

List of Geographic Locations

The WebFOCUS Server Console provides a list of first and second level map administrative regions. To open the list, select **Server Workspaces** from the Management Center on the Hub, click the **Settings** menu on the Workspace page ribbon, point to **Geo Services**, and select **General maps info**. This opens the list of administrative regions and postal levels, as shown in the following image.



Data Services Agents | General maps info

Country name	Maps license	Georole COUNTRY source	Georole STATE source	Georole COUNTY source	Georole CITY source	Georole POSTAL-CODE source	Country ISO CC2
Afghanistan	Free	ESRI world map	ESRI world map	None	ESRI world map	None	AF
Afghanistan	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AF
Albania	Free	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AL
Albania	Paid	ESRI world map	MB admin layer 1 Extended	MB admin layer 3 Extended	MB admin layer 5 Extended	MB postal layer 3 Extended	AL
Algeria	Free	ESRI world map	ESRI world map	None	ESRI world map	None	DZ
Algeria	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	DZ
American Samoa	Free	ESRI world map	ESRI world map	None	ESRI world map	None	AS
American Samoa	Paid	ESRI world map	MB admin layer 0	MB admin layer 0	MB admin layer 5	MB postal layer 3	AS
Andorra	Free	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AD
Andorra	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AD
Angola	Free	ESRI world map	ESRI world map	None	ESRI world map	None	AO
Angola	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	None	AO
Anguilla	Free	ESRI world map	ESRI world map	None	ESRI world map	None	AI
Anguilla	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AI
Antarctica	Free	ESRI world map	ESRI world map	None	ESRI world map	None	AQ
Antarctica	Paid	ESRI world map	ESRI world map	None	ESRI world map	None	AQ
Antigua and Barbuda	Free	ESRI world map	ESRI world map	None	ESRI world map	None	AG
Antigua and Barbuda	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	None	AG
Argentina	Free	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AR
Argentina	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AR
Armenia	Free	ESRI world map	ESRI world map	None	ESRI world map	None	AM
Armenia	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AM
Aruba	Free	ESRI world map	ESRI world map	None	ESRI world map	None	AW
Aruba	Paid	ESRI world map	MB admin layer 0	MB admin layer 0	MB admin layer 5	None	AW
Australia	Free	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AU
Australia	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AU
Austria	Free	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AT
Austria	Paid	ESRI world map	MB admin layer 1 Extended	MB admin layer 3 Extended	MB admin layer 5 Extended	MB postal layer 3 Extended	AT
Azerbaijan	Free	ESRI world map	ESRI world map	None	ESRI world map	None	AZ
Azerbaijan	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	AZ
Bahamas	Free	ESRI world map	ESRI world map	None	ESRI world map	None	BS
Bahamas	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	None	BS
Bahrain	Free	ESRI world map	ESRI world map	None	ESRI world map	None	BH
Bahrain	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	BH
Bangladesh	Free	ESRI world map	ESRI world map	None	ESRI world map	None	BD
Bangladesh	Paid	ESRI world map	MB admin layer 1	MB admin layer 3	MB admin layer 5	MB postal layer 3	BD

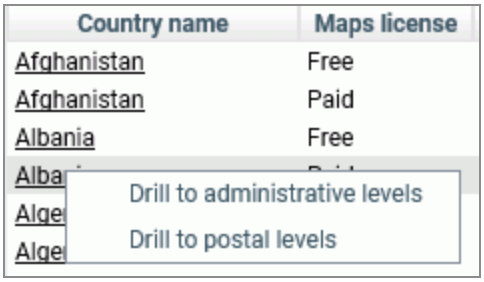
The regions that say *Paid* in the Maps license column are the additional regions you can access with a second level license.

- The source for the country administrative level is provided by the Esri World map. Country is administrative level 0.
- The source for the State georole can be provided by the Esri World map or by shape files. When there is a second level license, the state administrative level can be level

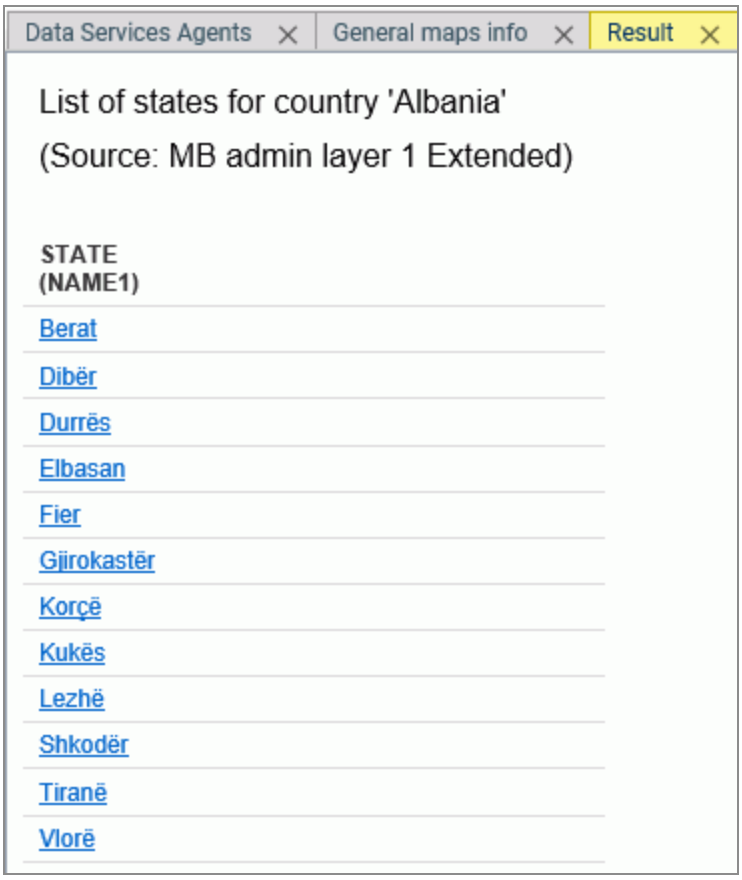
1 or level 2.

- The source for the County georole can be provided by the Esri World map or by shape files. When there is a second level license, the county administrative level can be level 3 or level 4.
- The source for the City georole can be provided by the Esri World map or by shape files. When there is a second level license, the city administrative level is level 5.
- The source for the Postal Code georole can be provided by the Esri World map or by shape files. When there is a second level license, the postal code administrative level can be 3, 4, or 5.

Some georoles may not be applicable to specific countries. You can see the details of each country and its administrative levels by right-clicking the country name and clicking **Drill to administrative levels** or **Drill to postal levels**, as shown in the following image.

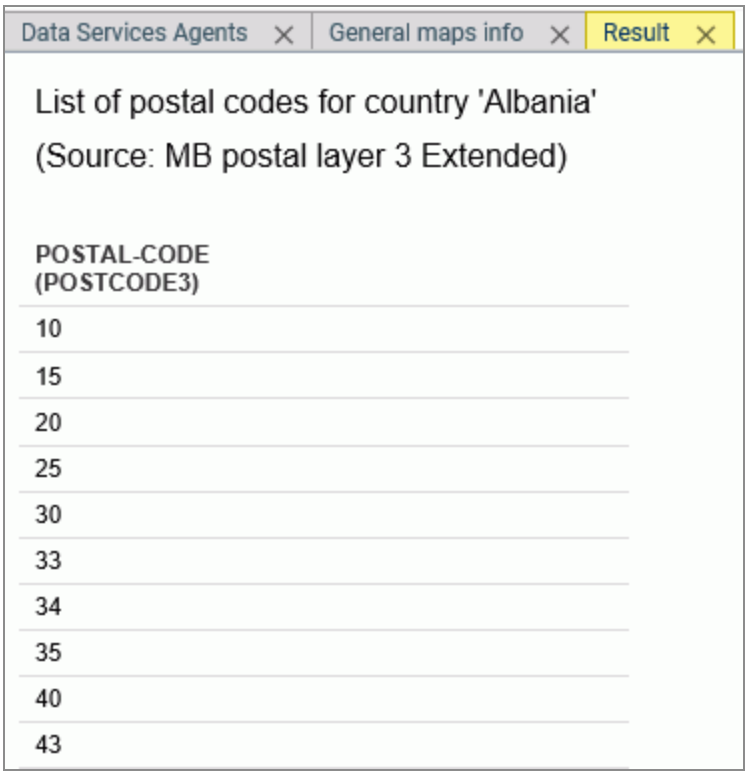


Clicking **Drill to administrative levels** opens the list of States for the country, as shown in the following image.

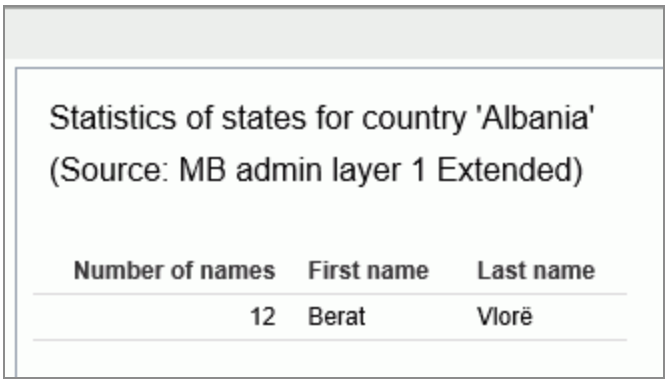


Clicking any link opens information about the next level georole.

Clicking Drill to postal levels opens the list of postal levels for the country, as shown in the following image.



Right-clicking a link in any georole column other than the Country column opens a summary of the values for that georole, as shown in the following image.



Using a Second Level License to Map French Postal Codes

The request used in this example references data about French state names, city names, and postal codes. This data is readily available online. The data in this example was downloaded from https://www.aggdata.com/free/france-postal-codes which is available for free using a Creative Commons Attribution 4.0 license detailed at https://creativecommons.org/licenses/by/4.0/. Once you download the data, you can

upload it to the server to create the data file and synonym for use in requests. This example assumes that the data and synonym are in the ibisamp application on the server.

Note: Information Builders takes no responsibility for the accuracy or continued existence of this data on this site. It is being used only as an example of the detailed administrative boundaries available with a second level license.

The Master File for the uploaded data follows. The Master File generated by the upload procedure was edited to change the first field name to COUNTRY and to remove the folder declarations.

```
FILENAME=FR_POSTAL_CODES, SUFFIX=DFIX    ,

 DATASET=ibisamp/fr_postal_codes.ftm (LRECL 1140 RECFM V, BV_
NAMESPACE=OFF, $

  SEGMENT=FR_POSTAL_CODES, SEGTYPE=S0, $

    FIELDNAME=COUNTRY, ALIAS=E01, USAGE=A50V, ACTUAL=A50V,

      TITLE='Country for State',

      GEOGRAPHIC_ROLE=COUNTRY,  $

    FIELDNAME=STATE, ALIAS=E02, USAGE=A21V, ACTUAL=A21V,

      MISSING=ON,

      TITLE='State',

      GEOGRAPHIC_ROLE=STATE,  $

    FIELDNAME=COUNTY, ALIAS=E03, USAGE=A25V, ACTUAL=A25V,

      MISSING=ON,

      TITLE='County',

      GEOGRAPHIC_ROLE=COUNTY,  $

    FIELDNAME=CITY, ALIAS=E04, USAGE=A48V, ACTUAL=A48V,

      MISSING=ON,
```

```
      TITLE='City',
      GEOGRAPHIC_ROLE=CITY,  $
    FIELDNAME=POSTAL_CODE, ALIAS=E05, USAGE=A16V, ACTUAL=A16V,
      MISSING=ON,
      TITLE='Postal Code',
      GEOGRAPHIC_ROLE=POSTAL-CODE,  $
    FIELDNAME=PLACE_NAME, ALIAS=E06, USAGE=A56V, ACTUAL=A56V,
      MISSING=ON,
      TITLE='Place Name', $
    FIELDNAME=GEO_POINT, ALIAS=E07, USAGE=A150, ACTUAL=A150,
      TITLE='GIS Point',
      GEOGRAPHIC_ROLE=GEOMETRY_POINT,  $
```

The Access File for the uploaded data follows.

```
SEGNAME=FR_POSTAL_CODES,
  DELIMITER=',',
  CDN=COMMAS_DOT,
  CONNECTION=<local>, $
```

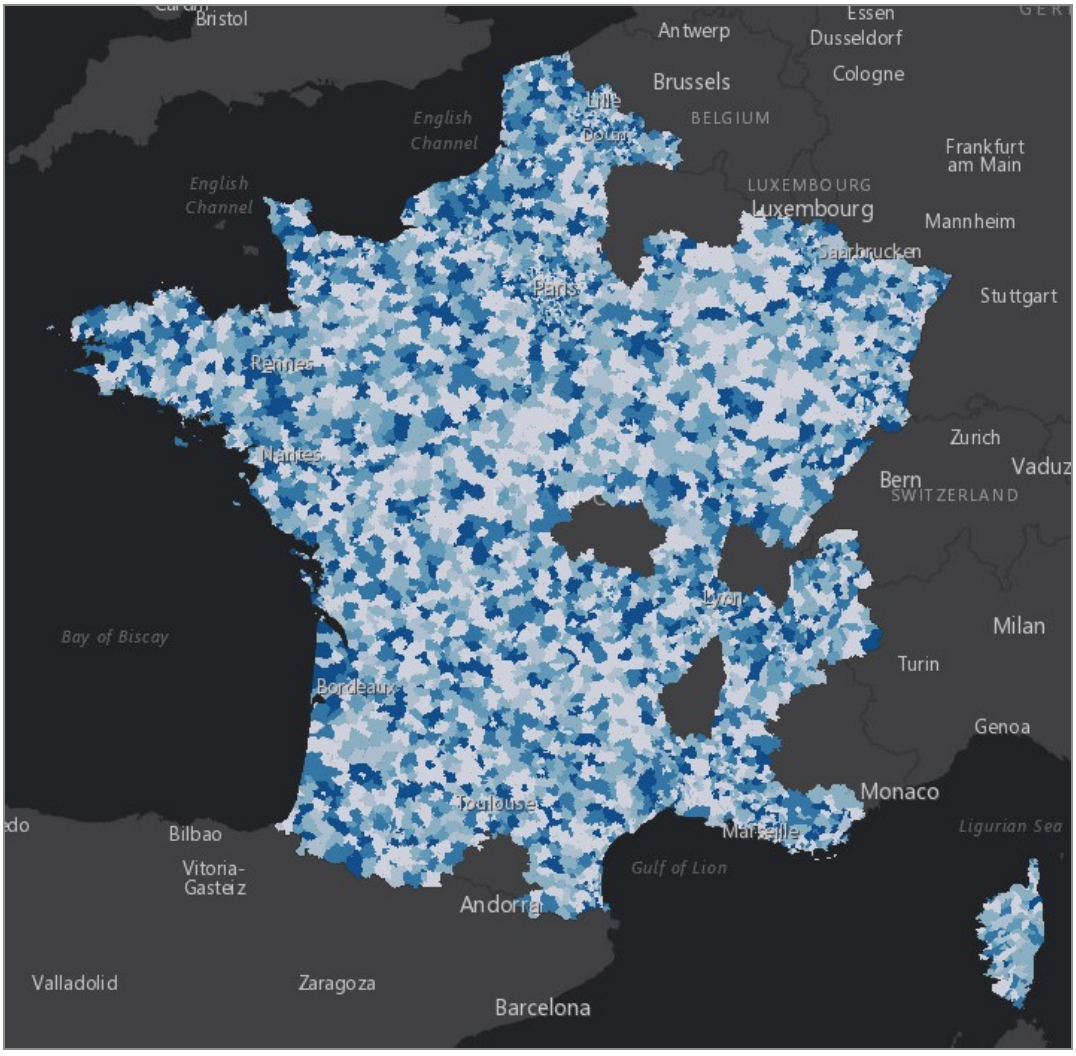
The following WebFOCUS Procedure generates a choropleth map that shows the postal codes from the uploaded data source. The DEFINE field is used to assign different numeric values to each field. When used in the Color bucket, this DEFINE field makes it easier to differentiate the different postal code areas.

```
DEFINE FILE fr_postal_codes

 FOURTH_CHAR/I1 ( TITLE = 'Fourth,Character' ) =

               SUBSTRING(FR_POSTAL_CODES.FR_POSTAL_CODES.POSTAL_CODE, 4, 1);

END


SET COMPONENT=TableChart_1

SET ARVERSION=2

-DEFAULTH &WF_TITLE='WebFOCUS Report';


GRAPH FILE fr_postal_codes

SUM FOURTH_CHAR

BY FR_POSTAL_CODES.FR_POSTAL_CODES.POSTAL_CODE

ON GRAPH PCHOLD FORMAT JSCHART

ON GRAPH SET VZERO OFF

ON GRAPH SET GRWIDTH 1

ON GRAPH SET HAXIS 1008.0

ON GRAPH SET VAXIS 768.0

ON GRAPH SET LOOKGRAPH CHOROPLETH

ON GRAPH SET EMBEDHEADING ON

ON GRAPH SET AUTOFIT ON

ON GRAPH SET STYLE *

INCLUDE=IBFS:/WFC/Global/Themes/Standard/Default/theme.sty,$

TYPE=REPORT, TITLETEXT='Chart1', ORIENTATION=LANDSCAPE,
ARREPORTSIZE=DIMENSION,
```

```
       ARFILTER_TARGET='*', CHART-LOOK=com.esri.map, ARGRAPHENGINE=JSCHART, $
TYPE=DATA, COLUMN=N2, BUCKET=color, $
*GRAPH_SCRIPT


*GRAPH_JS_FINAL
"extensions": {
    "com.esri.map": {
        "overlayLayers":             [
                {
                    "ibiDataLayer": {
                        "map-metadata": {
"map_by_field": "FR_POSTAL_CODES.FR_POSTAL_CODES.POSTAL_CODE"
                        }
                    }
                }
            ],
        "baseMapInfo": {
            "customBaseMaps":                 [
                    {
                        "ibiBaseLayer": "dark-gray"
                    }
                ]
        }
    }
```

```
}


*END

ENDSTYLE

END
```

When you run this procedure, the map displays postal codes in France, as shown in the following image.

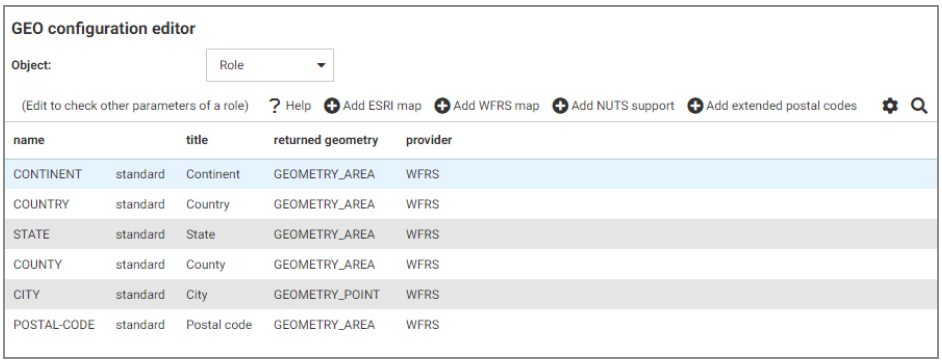


Adding a Custom Geographic Role

The GEO configuration editor in the WebFOCUS Reporting Server provides a tool for editing or adding properties for geographic roles.

On the WebFOCUS Hub, from the Management Center, click **Server Workspaces** to access the WebFOCUS Reporting Server Workspace area. Alternatively, from the WebFOCUS Home Page, click the **Settings** menu and click **WebFOCUS Server**. When the WebFOCUS Reporting Server browser interface opens, open the **Tools** menu and click **Workspace**. The Workspace area opens.

In the WebFOCUS Reporting Server Workspace area click **Settings**, point to **Geo Services**, then click **Edit Configuration**. The **GEO configuration editor** opens displaying the configured geographic roles, as shown in the following image.



Editing the List of Geographic Roles

The following standard unified geographic roles are configured by default and cannot be changed. These geographic roles create a hierarchy that can be used to drill down or up between levels of administration in maps, reports, or charts.

- CONTINENT.
- COUNTRY.
- STATE.
- COUNTY.
- CITY.
- POSTAL CODE.

To add a geographic role to the configuration, you can add a new Esri map or a shapefile hosted by the Server and associate a geographic role with the new map. You can also implement NUTS geographic roles support.

Note: Some users may not be able to run maps with custom geographic roles when the default reporting server security configuration is in place. To allow a user to run content with custom geographic roles, on the Access Control page of the WebFOCUS Reporting Server browser interface, right-click the role that the user privileges are based on and click **Directory/File Privileges**, then enable both the run and List privileges for geo_services_user.xml.

Configuring Properties of Geographic Roles

The following describes columns for geographic roles in the configuration editor.

name

Is the unique name of the geographic role. It cannot have spaces, but it can have underscores (_).

Next to the name is an indicator of whether the role is a standard role or a customized role.

title

Is the description of the geographic role that is displayed in reports and in dropdown lists in the WebFOCUS tools.

returned_geometry

Is the type of geographic data returned from the map service for rendering on the map.

Valid values include:

- GEOMETRY_AREA
- GEOMETRY_POINT
- GEOMETRY_LINE

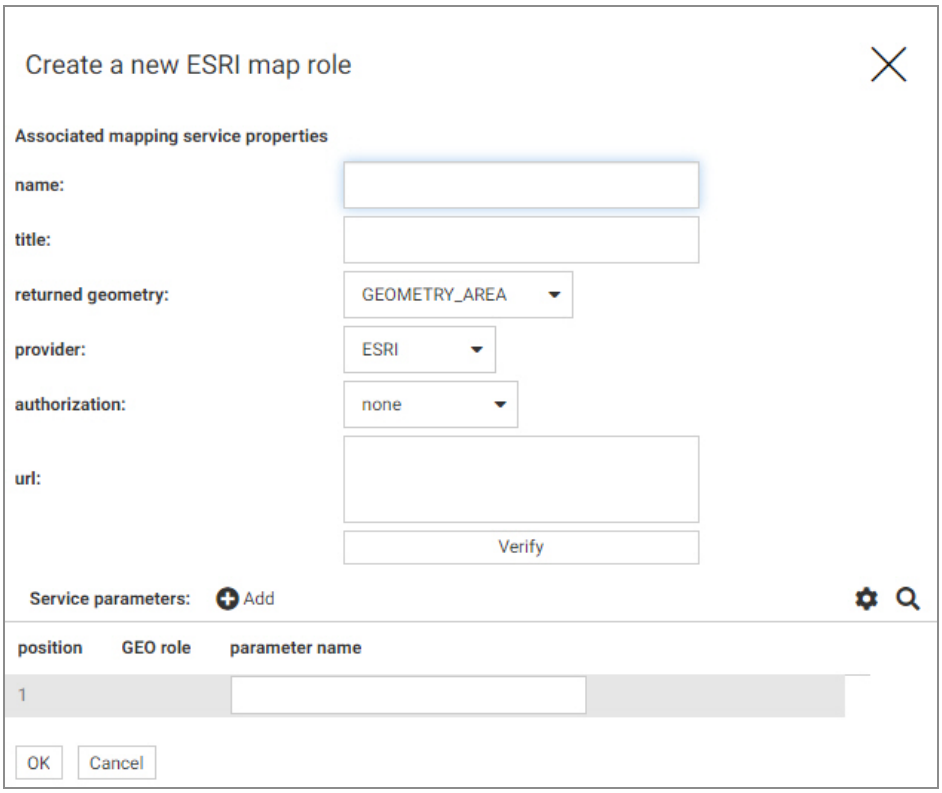
When you have configured the properties, click **OK** to return to the Geo Configuration Editor.

The new role displays on the list of roles, click **Save** to save it in the geographic configuration.

Adding a New Role for an Esri Map

To add an Esri geographic role, click **Add ESRI map** on the Geographic Configuration Editor.

The **Create a new ESRI map role** dialog opens, as shown in the following image.



Configure the following map service properties.

name

Is a name for the geographic role.

title

Is a title to display in the WebFOCUS tools.

returned_geography

Select the type of geometry that is returned from the map service for this role. Valid values are:

- **GEOMETRY_AREA.** Returns JSON polygon definitions.

- **GEOMETRY_LINE.** Returns JSON line definitions.
- **GEOMETRY_POINT.** Returns a JSON point.

url

Is the URL to the map service that provides the geographic data.

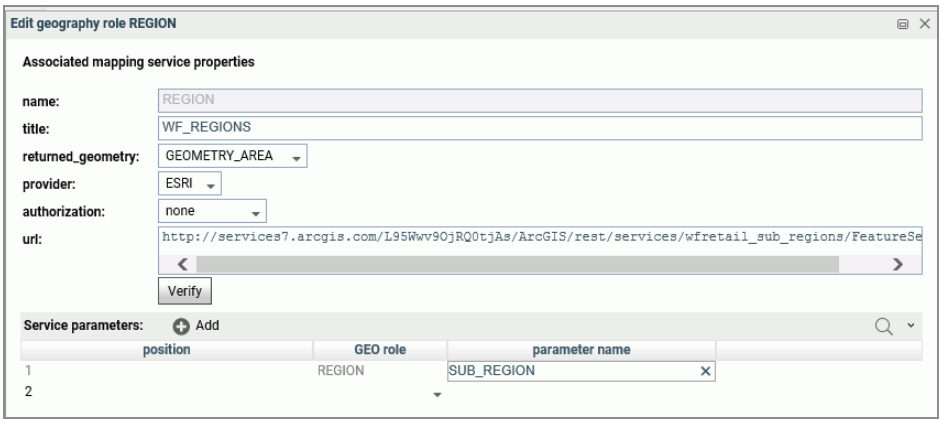
Click **Verify** after entering the URL to verify that the map service is available by going to the specified URL.

Service Parameters

Add as parameters any additional geographic roles needed to identify the exact location of the new role. For example, a city name needs state and country parameters.

Adding the WebFOCUS Regions Geographic Role

The following properties add the WebFOCUS Regions role to the configuration.

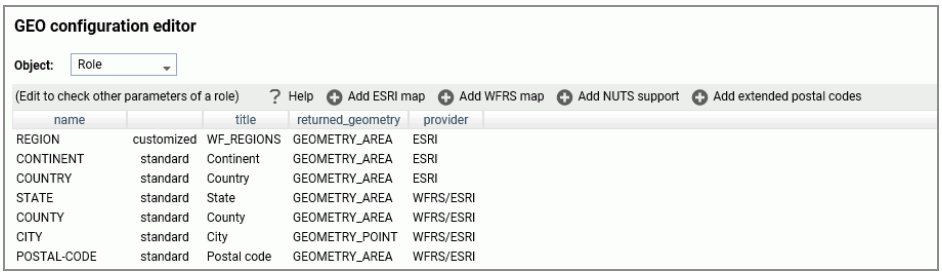


Note: The *parameter name* corresponds to the field name in the FeatureLayer referenced in the following URL:

```
http://services7.arcgis.com/L95Www9OjRQ0tjAs/ArcGIS/rest/services/wfreta
il_sub_regions/FeatureServer/0
```

Click **OK** when you have finished configuring the properties.

The new role is added to the configuration as a customized role, as shown in the following image.



Click **Save** to save this role to the configuration.

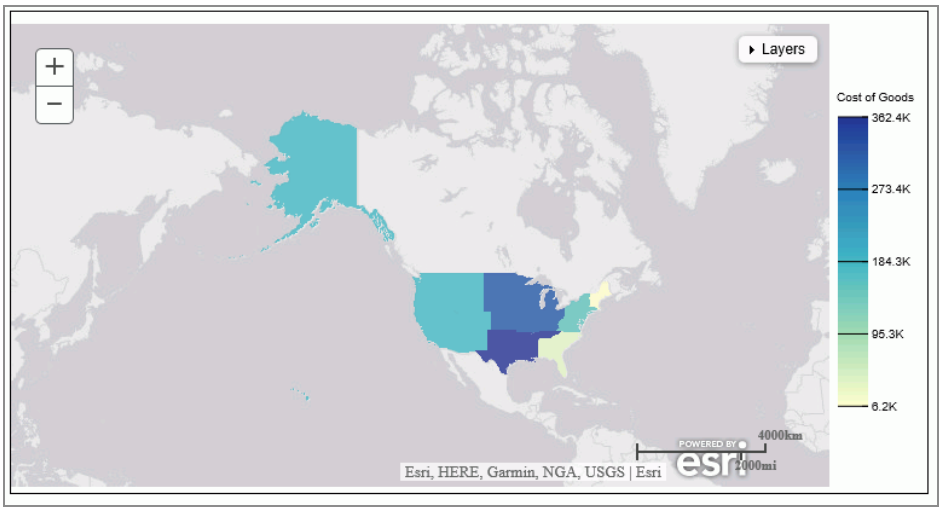
The following request uses the WebFOCUS Regions geographic role in a map request.

```
DEFINE FILE WF_RETAIL_LITE


REGION/A50 (GEOGRAPHIC_ROLE=REGION) = BUSINESS_SUB_REGION;

END


GRAPH FILE WF_RETAIL_LITE

SUM COGS_US

BY REGION

WHERE COUNTRY_NAME EQ 'United States'

ON GRAPH PCHOLD FORMAT JSCHART

ON GRAPH SET LOOKGRAPH CHOROPLETH

ON GRAPH SET STYLE *

TYPE=REPORT, CHART-LOOK=com.esri.map, $

TYPE=DATA, COLUMN=N2, BUCKET=color, $

*GRAPH_JS_FINAL

"extensions": {

"com.esri.map": {

"overlayLayers":
```

```
[
{
"ibiDataLayer": {
"map-metadata": {
"map_by_field": "
REGION"
}
}
}
],
"baseMapInfo":
{
"customBaseMaps":
[
{
"ibiBaseLayer": "gray"
}
]
}
}
}
*END
ENDSTYLE
```

```
END
```

The output is shown in the following image.



Adding a New Role for a Server-Hosted Map

A server-hosted map is based on a shapefile. You must upload the shapefile (.dbf) to an application folder accessible to the server. The server transforms it to ibijson format.

An ESRI shape file is actually a collection of at least four files:

- **.dbf file.** The .dbf file is a standard database file used to store attribute data and object IDs. A .dbf file is mandatory for shape files.
- **.shp file.** The .shp file is a mandatory Esri file that gives features their geometry. Every shapefile has its own .shp file that represents spatial vector data.
- **.shx file.** The .shx file is a mandatory Esri shape index position file. This type of file is used to search forward and backwards.
- **.prj file.** The .prj file is an optional file that contains the metadata associated with the shapefiles coordinate and projection system.

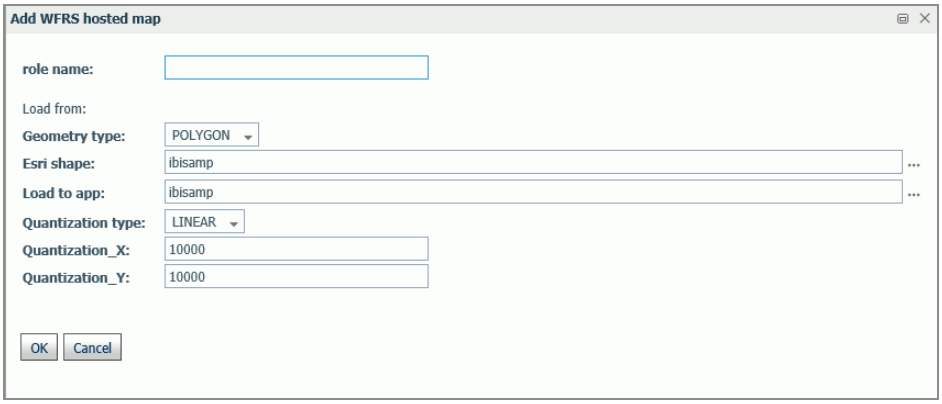
All files must have the same name and to be located in the same directory. If they are not, the shapefile conversion fails.

When there are several possible keys associated with a geometry, a dropdown list of detected key names is displayed. Select any one of these fields. No selection is required when there is a single geometry key.

The shapefile should only be in the GCS_WGS_1984 - World Geodetic System 1984 (decimal degrees) coordinate system.

To add a geographic role for a Server-hosted map, click **Add WFRS map** on the Geographic Configuration Editor.

The **Add WFRS hosted map** dialog opens, as shown in the following image.



Configure the following properties.

role name

Is a name for the geographic role.

Geometry type

Select either POLYGON or POINT from the dropdown list.

Esri shape

Enter the name of the application directory where the shapefile resides, or click the ellipsis (...) to navigate to the application directory. Then select the .dbf file for the role.

Load to app

Enter the name of the application directory where you want to place the ibijson file, or click the ellipsis (...) to navigate to the application directory.

Quantization type

Quantization is the process of transforming a large set of input values to a smaller set of values. When transforming the shapefile, the server quantizes points that are too close together to optimize map rendering performance. Two methods are available for quantization, LINEAR or GRID. The default is LINEAR.

Quantization_X

Is the threshold value for the x-axis.

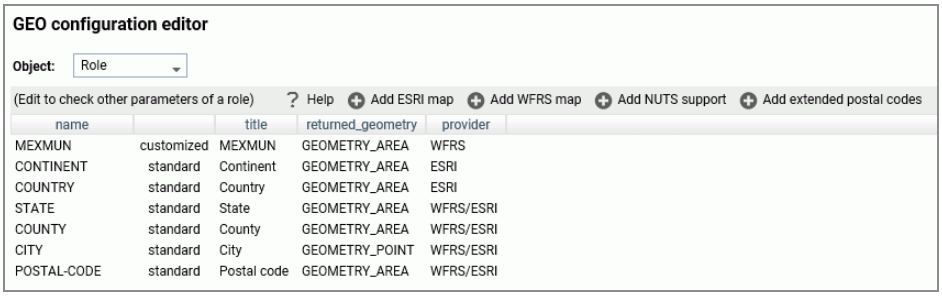
Quantization_Y

Is the threshold value for the y-axis.

If the map has multiple keys, a dropdown list displays so that you can select one.

Click **OK** when you have finished configuring the properties.

The new role is added to the configuration as a customized role, as shown in the following image.



GEO configuration editor

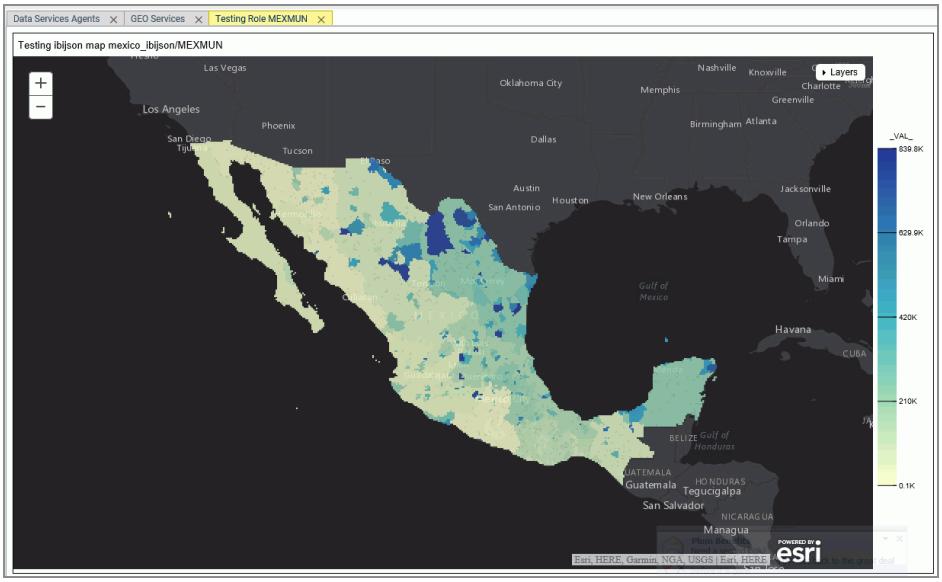
Object: Role

(Edit to check other parameters of a role) Help Add ESRI map Add WFRS map Add NUTS support Add extended postal codes

name		title	returned_geometry	provider
MEXMUN	customized	MEXMUN	GEOMETRY_AREA	WFRS
CONTINENT	standard	Continent	GEOMETRY_AREA	ESRI
COUNTRY	standard	Country	GEOMETRY_AREA	ESRI
STATE	standard	State	GEOMETRY_AREA	WFRS/ESRI
COUNTY	standard	County	GEOMETRY_AREA	WFRS/ESRI
CITY	standard	City	GEOMETRY_POINT	WFRS/ESRI
POSTAL-CODE	standard	Postal code	GEOMETRY_AREA	WFRS/ESRI

Click **Save** to save this role to the configuration.

You can test the role by right-clicking the role in the configuration editor and clicking **Test**. A sample map is generated, as shown in the following image.

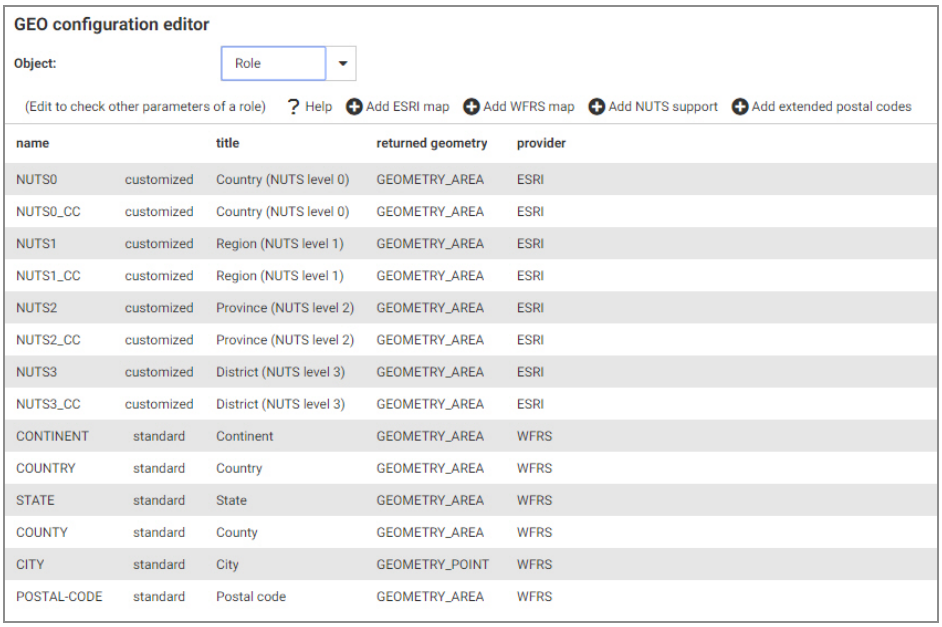


Adding NUTS Support

Nomenclature of territorial units for statistics (NUTS) are geographic roles specific to the European Union.

To add NUTS geographic roles to the configuration, click **Add NUTS support** on the Geographic Configuration Editor.

The NUTS geographic roles are added, as shown in the following image.



name		title	returned geometry	provider
NUTS0	customized	Country (NUTS level 0)	GEOMETRY_AREA	ESRI
NUTS0_CC	customized	Country (NUTS level 0)	GEOMETRY_AREA	ESRI
NUTS1	customized	Region (NUTS level 1)	GEOMETRY_AREA	ESRI
NUTS1_CC	customized	Region (NUTS level 1)	GEOMETRY_AREA	ESRI
NUTS2	customized	Province (NUTS level 2)	GEOMETRY_AREA	ESRI
NUTS2_CC	customized	Province (NUTS level 2)	GEOMETRY_AREA	ESRI
NUTS3	customized	District (NUTS level 3)	GEOMETRY_AREA	ESRI
NUTS3_CC	customized	District (NUTS level 3)	GEOMETRY_AREA	ESRI
CONTINENT	standard	Continent	GEOMETRY_AREA	WFRS
COUNTRY	standard	Country	GEOMETRY_AREA	WFRS
STATE	standard	State	GEOMETRY_AREA	WFRS
COUNTY	standard	County	GEOMETRY_AREA	WFRS
CITY	standard	City	GEOMETRY_POINT	WFRS
POSTAL-CODE	standard	Postal code	GEOMETRY_AREA	WFRS

Click **Save** to save these roles to the configuration.

Adding Support for Extended Postal Codes

Click **Add extended postal codes** to add support for Level 1 and Level 2 postal codes used in certain countries.

Customizing Vocabulary Rules

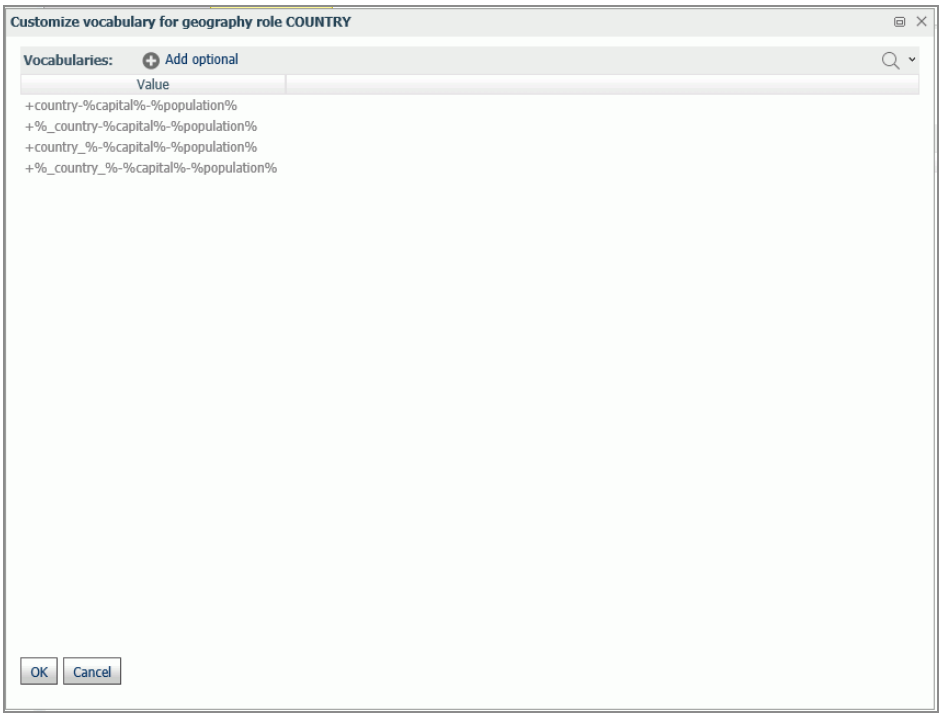
For each geographic role, a set of vocabulary rules define how to recognize when a field name should automatically be assigned to that role. If you right-click a role, you can click **Customize vocabulary** from the shortcut menu.

Elements in a rule are connected by the Boolean logic operation OR (only one needs to be satisfied). Each vocabulary element contains words enclosed with special characters. Words

in the rule element are connected by the Boolean logic operation AND (all need to be satisfied).

A word may be prefixed and/or suffixed with the percent character (%), which is a placeholder for any sequence of characters. If an element contains more than one word, each word has to be prefixed by the character plus (+) or minus (-). Plus indicates that the word must be found in the column name. Minus indicates that the word must not be found in the column name.

For example, the following are the vocabulary rules for the role COUNTRY.



To add another rule, click **Add optional**.

When you are finished, click **OK**.

Click **Save** to save these rules to the configuration.

Customizing the List of Basemaps

You can edit an existing basemap definition or add a custom basemap.

Using Standard Basemaps

To add a new basemap or customize an existing basemap, select **Basemap** from the Object dropdown list.

Configuring Basemap Properties

The following is a description of the properties used for basemap configuration.

name

Is the name of the basemap.

Next to the name is an indicator of whether the basemap is a standard basemap or a customized basemap.

icon

Is the name of the thumbnail for the basemap (for a standard basemap) or the URL to the thumbnail (for a customized basemap) that appears on the Basemap dropdown list in the WebFOCUS tools (for example, the Base map menu in WebFOCUS Designer) or the Change Basemap map widget.

title

Is a title to display on the Basemap dropdown list in the WebFOCUS tools or the Change Basemap map widget.

url

Is the URL to the map service that provides the basemap, for a customized basemap. The map service URL can be copied from the URL field on the page showing a custom basemap. For a standard basemap, the URL is already stored in the server geographic configuration file and is not displayed.

type

Valid values are tiled and vector.

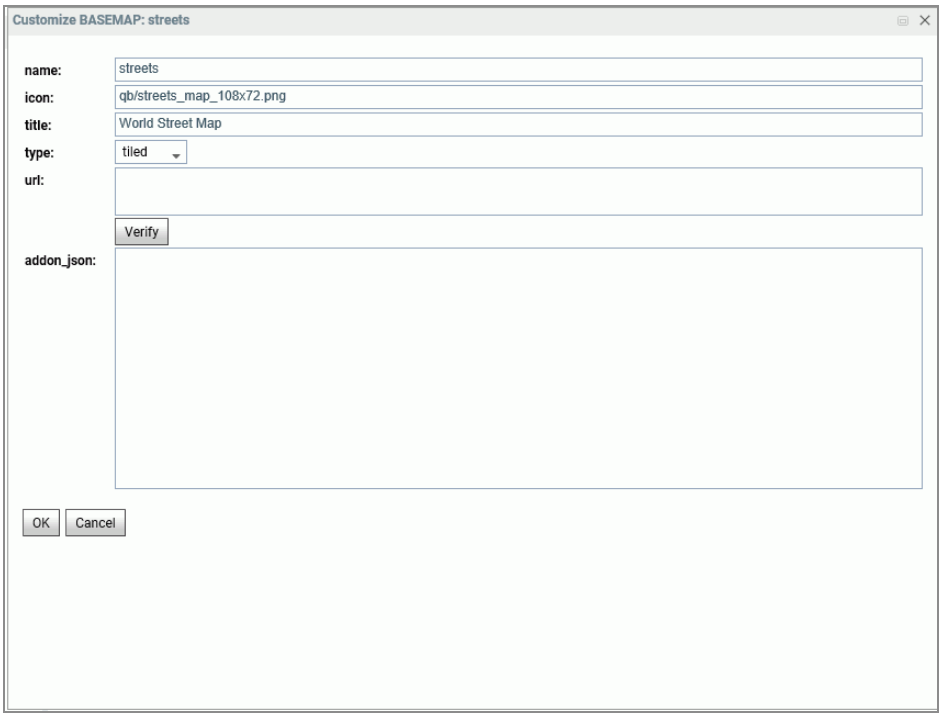
addon_json

Specifies additional JSON properties for rendering the map.

Editing the Properties of a Basemap

To customize the properties of an existing basemap, right-click the basemap line and click **Customize BASEMAP**.

The Customize Basemap dialog opens, as shown in the following image.



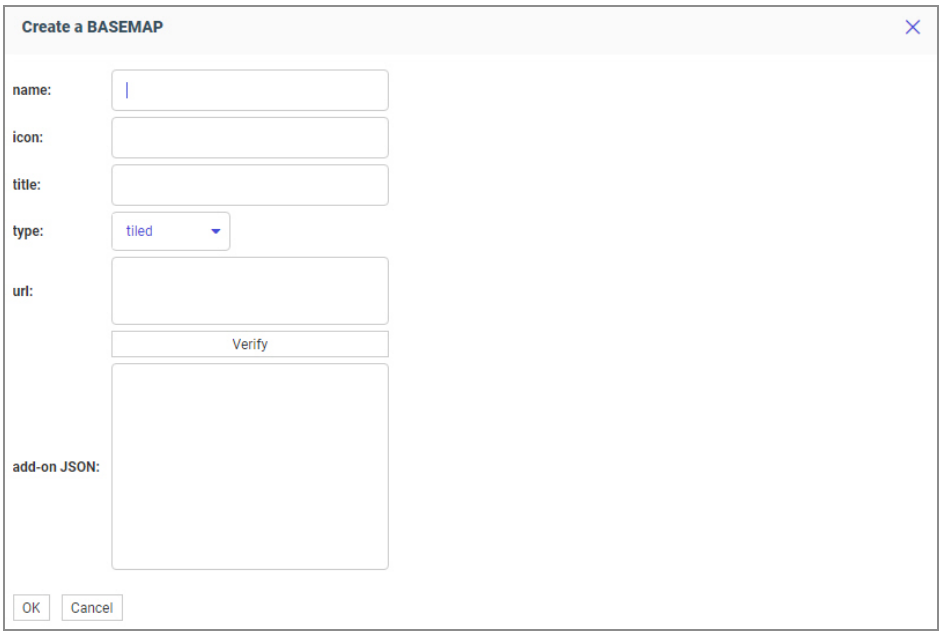
Edit the properties that you want to change. If you change the URL, you can click **Verify** to make sure the map service is valid and accessible.

When you are finished, click **OK**, then click **Save** on the GEO configuration editor Basemaps page.

Adding a Custom Basemap

To add a new basemap to the configuration, click **Add**.

The **Create a BASEMAP** dialog opens, as shown in the following image.



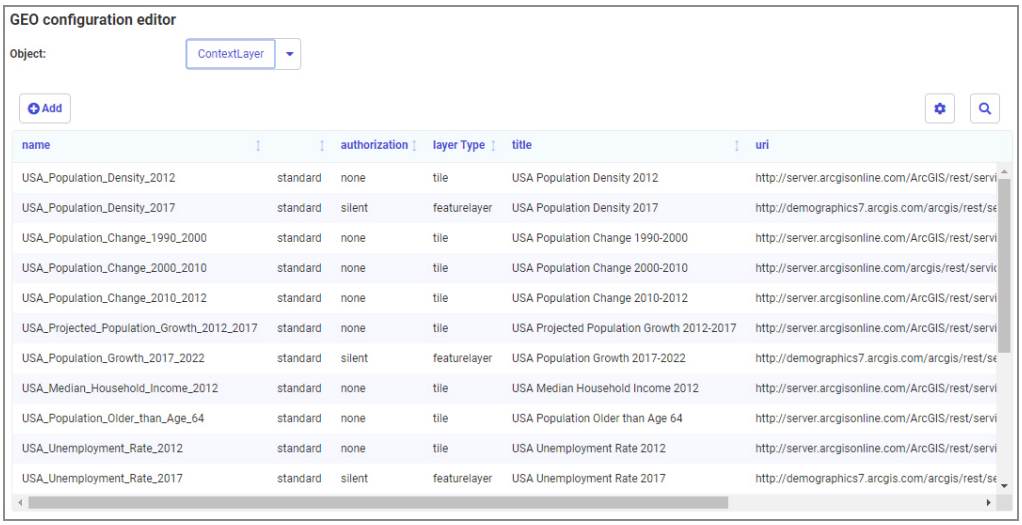
Enter a name for the basemap, a URL to the thumbnail, a title to display, and the URL to the map service that provides the basemap, and click **Verify**.

When you have configured the properties, click **OK**, then click **Save** on the GEO configuration editor Basemap page.

Customizing the List of Context Layers

To add a new context layer or customize an existing context layer, select **ContextLayer** from the Object dropdown list.

The following image shows the GEO configuration editor with the ContextLayer object selected.



name		authorization	layer Type	title	uri
USA_Population_Density_2012	standard	none	tile	USA Population Density 2012	http://server.arcgisonline.com/ArcGIS/rest/servi
USA_Population_Density_2017	standard	silent	featurelayer	USA Population Density 2017	http://demographics7.arcgis.com/arcgis/rest/se
USA_Population_Change_1990_2000	standard	none	tile	USA Population Change 1990-2000	http://server.arcgisonline.com/ArcGIS/rest/servi
USA_Population_Change_2000_2010	standard	none	tile	USA Population Change 2000-2010	http://server.arcgisonline.com/arcgis/rest/servic
USA_Population_Change_2010_2012	standard	none	tile	USA Population Change 2010-2012	http://server.arcgisonline.com/ArcGIS/rest/servi
USA_Projected_Population_Growth_2012_2017	standard	none	tile	USA Projected Population Growth 2012-2017	http://server.arcgisonline.com/ArcGIS/rest/servi
USA_Population_Growth_2017_2022	standard	silent	featurelayer	USA Population Growth 2017-2022	http://demographics7.arcgis.com/arcgis/rest/se
USA_Median_Household_Income_2012	standard	none	tile	USA Median Household Income 2012	http://server.arcgisonline.com/ArcGIS/rest/servi
USA_Population_Older_than_Age_64	standard	none	tile	USA Population Older than Age 64	http://server.arcgisonline.com/ArcGIS/rest/servi
USA_Unemployment_Rate_2012	standard	none	tile	USA Unemployment Rate 2012	http://server.arcgisonline.com/ArcGIS/rest/servi
USA_Unemployment_Rate_2017	standard	silent	featurelayer	USA Unemployment Rate 2017	http://demographics7.arcgis.com/arcgis/rest/se

Configuring Context Layer Properties

Following is a description of the properties used for context layer configuration.

name

Is the name of the context layer.

Next to the name is an indicator of whether the context layer is a standard context layer or a customized context layer.

authorization

Is the type of authentication needed to access this context layer. Valid values are:

- **silent.** Credentials for your ArcGIS application are provided in the connection string of the Adapter for Esri ArcGIS.

  > **Note:** For instructions for configuring the Adapter for Esri ArcGIS, see the *ibi™ WebFOCUS® Adapter Administration* guide.

- **none.** No authorization is needed.
- **named.** User credentials are provided in the connection string of the Adapter for Esri.
- **on premises.** User credentials for a locally hosted ArcGIS server are provided in the connection string of the Adapter for Esri.

layer type

Is the type of context layer. For a cached layer, the layer type is tile. For a layer that is rendered dynamically, the layer type is featurelayer.

title

Is a title to display on the demographic layer dropdown list in the WebFOCUS tools.

addon_json

Specifies additional JSON properties that can be used to control the rendering of the context layer. For example, smartMapping properties define the border styles within the context layer.

You no longer need to supply the addon_json property when configuring a layer. Instead, in the URI property, you can reference a layer by service URL, or by portal ID.

Depending on the type of context layer, the addon_json properties may resemble the following:

```
"layerObjectType" : "esri/layers/ArcGISDynamicMapServiceLayer",

    "smartMapping": { "webMapInfo": {

        "queryString" : "id:id",

        "itemDataUrl" : "url",

        "layerTypeEx" : "layerType"

}}
```

where:

esri/layers/ArcGISDynamicMapServiceLayer

Defines the context layer as a dynamic map service.

id

Is the ID of the context layer on Esri ArcGIS. This can be found in the URL for the layer on the Esri ArcGIS site, or as the value of the "serviceItemId" property in the JSON properties accessible from the service URL of the layer.

If there is no layer ID, then this property can be omitted.

url

Is the map service URL for the layer. This should match the value that you provide for the uri field.

layerType

Is an optional value to specify the type of context layer. It can be one of the following values:

- **group.** Identifies the context layer as a group layer composed of multiple feature layers. For more information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-layers-GroupLayer.html.
- **map-image.** Identifies the context layer as a map image layer, which can contain multiple sub-layers rendered as images rather than features. For more information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-layers-MapImageLayer.html.
- **feature.** Identifies the context layer as a feature layer, which is a single layer created from a map service or feature service. For more information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-layers-FeatureLayer.html.
- **imagery-tile.** Identifies the context layer as an imagery tile layer, created from a tiled image service. For more information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-layers-ImageryTileLayer.html.
- **imagery.** Identifies the context layer as an imagery layer, created from an image service. For more information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-layers-ImageryLayer.html.
- **elevation.** Identifies the context layer as an elevation layer used in a 3D SceneView. For more information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-layers-ElevationLayer.html.
- **streaming.** Identifies the context layer as a streaming layer. For more

information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-layers-StreamLayer.html

- **tile.** Identifies the context layer as a tile layer, created from a cached map service. For more information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-layers-TileLayer.html.
- **web-map.** Identifies a complete, two-dimensional WebMap. For more information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-WebMap.html.
- **web-scene.** Identifies a complete, 3D web scene. For more information, see https://developers.arcgis.com/javascript/latest/api-reference/esri-WebScene.html.

If your context layer is neither a group layer nor a map image layer, the layerTypeEx property is not needed.

For example, the add-on JSON for a map image layer may resemble the following:

```
"layerObjectType" : "esri/layers/ArcGISTiledMapServiceLayer",

"smartMapping": { "webMapInfo": {

    "queryString" : "id:1234567890abcdefghij1234567890ab",

    "itemDataUrl" :


"https://services5.arcgis.com/1234567890abcdef/arcgis/rest/services/Layer_Name/FeatureServer",

    "layerTypeEx" : "map-image"

    }

}
```

uri

Is the URL to the map service that provides the context layer.

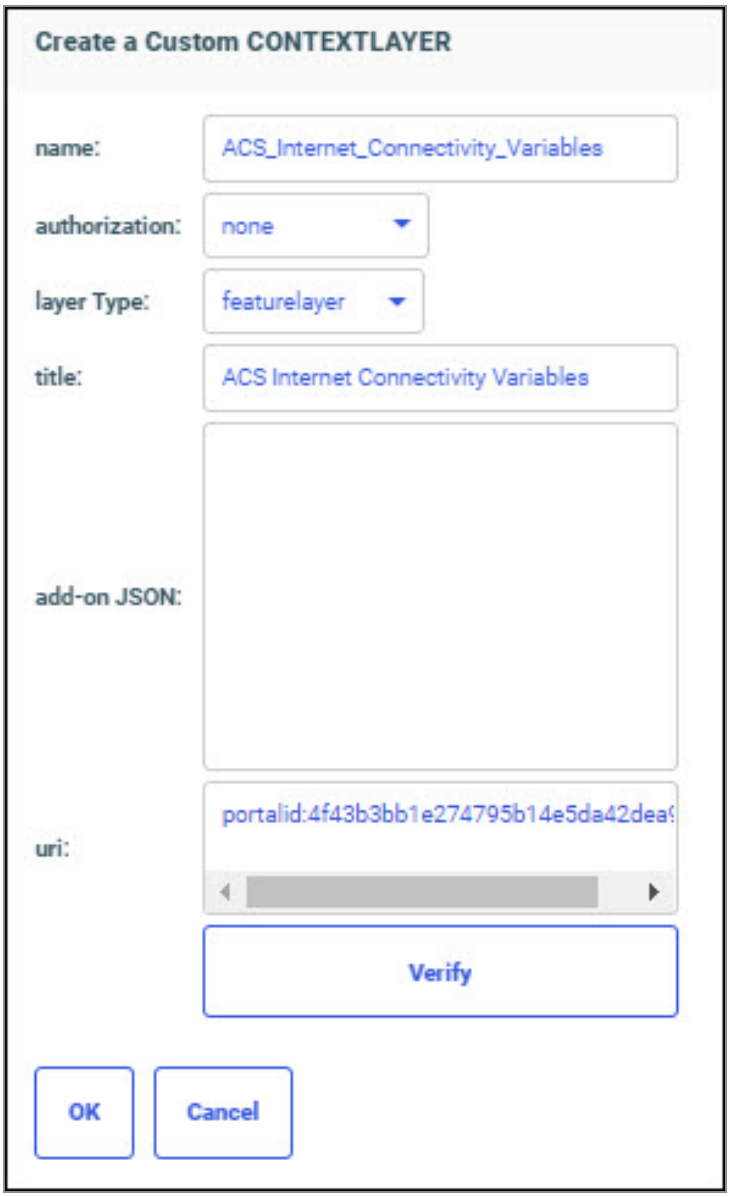
The uri field should contain one of the following:

- The service URL for the layer
- If the layer does not require authentication, the portal ID for the layer, prefixed by portalid:. For example, portalid:abc123efg567
- If the layer does require authentication, either silent or named, the portal ID for the layer, prefixed by portalid: followed by the base URL for the layer, prefixed by urlprefix:, separated by a semicolon. For example, portalid:abc123efg456;urlprefix:https://host.arcgis.com

Customizing the Properties of an Existing Context Layer

To customize the properties of an existing context layer, click the down arrow next to a context layer name or right-click the context layer line and click **Customize context layer**.

The Create a Custom CONTEXTLAYER dialog opens. The completed dialog may resemble the one shown in the following image.



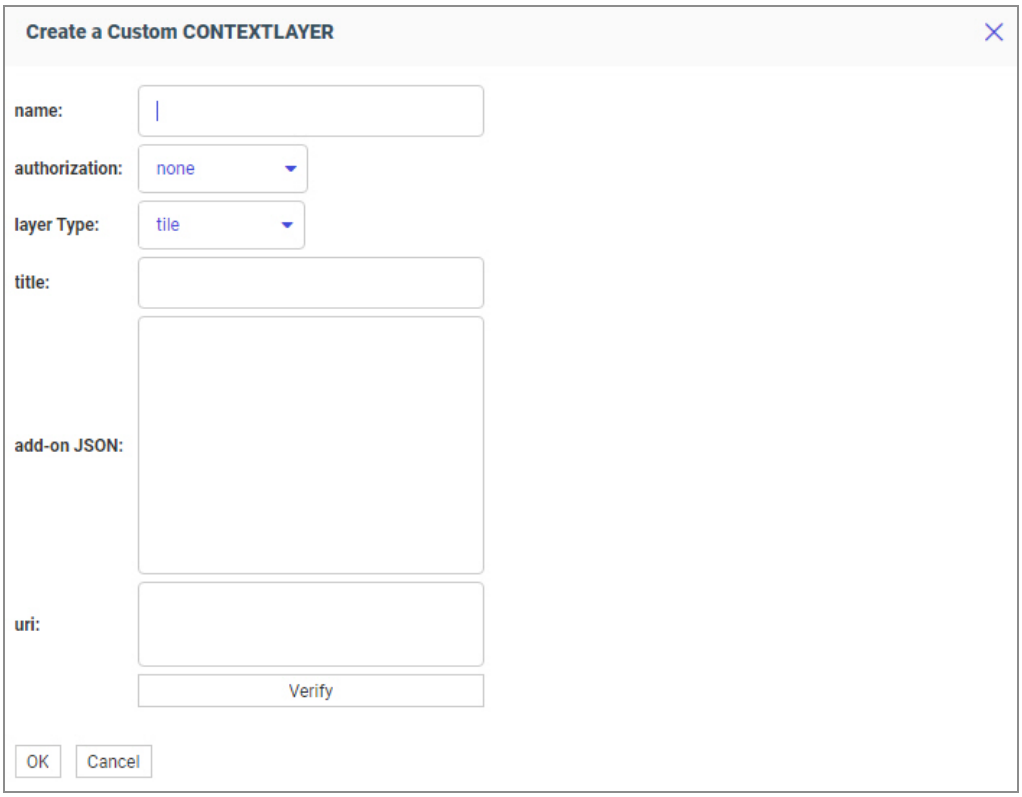
Edit the properties you want to change. If you change the URI, you can click **Verify** to make sure the map service is valid and accessible.

When you are finished, click **OK**, then click **Save** on the GEO configuration editor Context Layers page.

Adding a New Context Layer

To add a new context layer to the configuration, click **Add**.

The **Create a Customized CONTEXTLAYER** dialog opens, as shown in the following image.

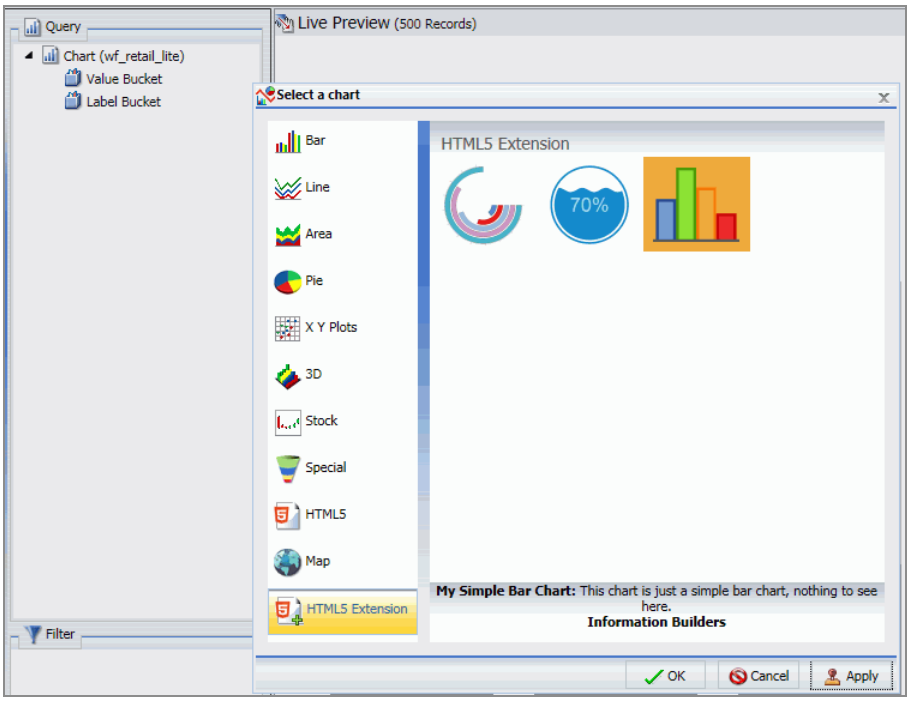


Enter a name for the context layer, the authorization type, a layer type, a title to display, any additional JSON needed for rendering the context layer, and the URI to the map service that provides the context layer, and click **Verify**.

When you have configured the properties, click **OK**, then click **Save** on the GEO configuration editor Context Layer page.

Using Your Extension in anibi WebFOCUS Request

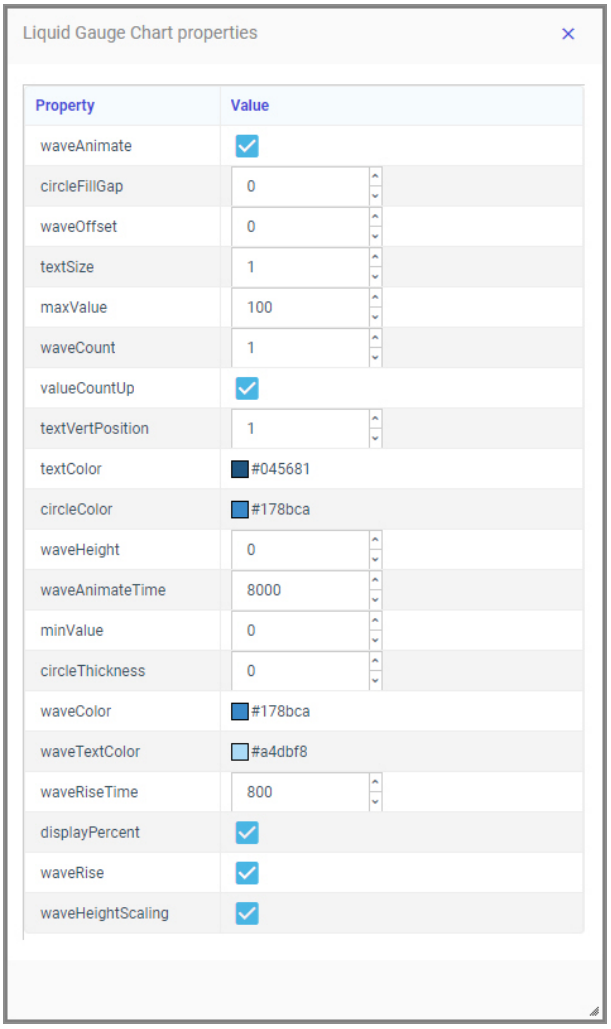
If you have installed and configured your extension as described, your extension is available for use in the WebFOCUS tools as a chart type in the **Other** format category under **HTML5 Extension**, as shown in the following image.



When creating a chart using WebFOCUS, chart extensions are available in the Custom category when you expand the content picker, as shown in the following image.

The attribute categories you defined in the dataBuckets object of your extension are available in the Query pane in InfoAssist or Display panel in WebFOCUS.

Additionally, in WebFOCUS, the properties defined in the propertyAnnotations object are available on the Format tab, in the Other section, when General is selected in the Quick Access menu. Clicking **Extension properties** opens the Extension properties panel, where you can change the available properties, as shown in the following image, which shows properties for the liquid gauge chart extension.



The following syntax is added in the FOCEXEC:

- The LOOKGRAPH value is EXTENSION.
- The actual extension to use is identified in the chartType property of the *GRAPH_JS block in the StyleSheet. For example, for a liquid gauge chart:

```
*GRAPH_JS
```

```
    chartType: "com.ibi.liquid_gauge",
```

- Each custom attribute category name is prepended with a greater-than character (>). For example, for a simple bar chart that has one label field and four value fields:

```
TYPE=DATA, COLUMN=N1, BUCKET= >labels, $

TYPE=DATA, COLUMN=N2, BUCKET= >value, $

TYPE=DATA, COLUMN=N3, BUCKET= >value, $

TYPE=DATA, COLUMN=N4, BUCKET= >value, $

TYPE=DATA, COLUMN=N5, BUCKET= >value, $
```

- Extension chart properties are listed under the extensions:*extension_name* object. For example, for a liquid gauge chart with the number of waves set to 3 and the wave color set to a shade of dark blue, the properties appear as follows:

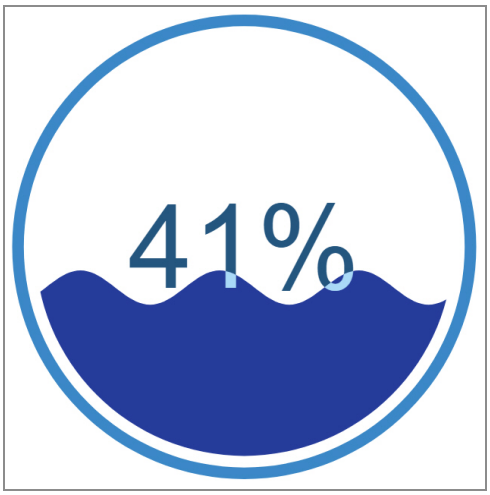
```
"extensions": {

    "com.ibi.liquid_gauge": {

        "waveCount": 3,

        "waveColor": "#083f9e"

    }

}
```

The following is a sample request using the liquid gauge extension.

```
GRAPH FILE wf_retail_lite

SUM PCT.WF_RETAIL_LITE.WF_RETAIL_SALES.QUANTITY_SOLD

BY WF_RETAIL_LITE.WF_RETAIL_GEOGRAPHY_CUSTOMER.BUSINESS_REGION

WHERE_GROUPED WF_RETAIL_LITE.WF_RETAIL_GEOGRAPHY_CUSTOMER.BUSINESS_REG

ION EQ 'North America'
```

```
ON GRAPH PCHOLD FORMAT JSCHART

ON GRAPH SET LOOKGRAPH EXTENSION

ON GRAPH SET AUTOFIT ON

ON GRAPH SET STYLE *

TYPE=DATA, COLUMN=N2, BUCKET= >value, $

*GRAPH_JS_FINAL

"chartType": "com.ibi.liquid_gauge",

"extensions": {

    "com.ibi.liquid_gauge": {

       "waveCount": 3,

       "waveColor": "#083f9e"

    }

}

*END

ENDSTYLE

END
```

Run the chart. The output is shown in the following image.



Configuring the Automatic Refresh Option for Charts

WebFOCUS Designer allows you to integrate real-time streaming data with your charts using the Automatic refresh option. For example, for IoT analytics applications, if you configured a connection to a streaming data source using the Kafka adapter, the Automatic refresh option can be enabled to update your chart dynamically at a specified interval (in seconds). Depending on your specific use case or requirements, you can configure multiple charts using the Automatic refresh option and add them to assembled pages. Each chart refreshes independently with updated data based on the specified refresh rate.

Considerations

As of WebFOCUS Designer 8207, the Automatic refresh option is supported for all chart types, except for maps (for example, Proportional Symbol and Choropleth maps). The Automatic refresh option is not available for reports in WebFOCUS Designer. In addition, this option is not included in InfoAssist. Automatic refresh is only supported for stand-alone charts. If you convert the chart to a page, a warning appears, alerting you that automatic refresh is not carried over.

Enable and Configure the Automatic Refresh Option for a Chart

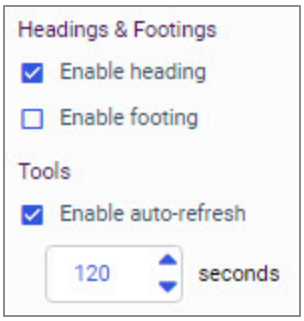
Procedure

1. Create a new chart in WebFOCUS Designer. To best utilize the automatic refresh feature, use a streaming data source, such as one using the Kafka adapter.
2. Choose a chart type from the content picker, as shown in the following image.

3. Add measures and dimensions according to your requirements by dragging them onto the canvas.

   Note:
   You can also double-click a measure or dimension to add it to the relevant bucket or drag it into the relevant bucket.

4. Apply any required formatting or styling to your chart (for example, adding a header or footer).
5. To turn on automatic refresh, on the Settings tab, expand the Content section. Select the **Enable auto-refresh** checkbox, as shown in the following image.



6. By default, the refresh interval is set to 120 seconds. Use the spinner or type a value to specify the refresh rate in seconds, which is the period of time to wait until the chart polls the corresponding data source to reflect any updated data.

   Note:
   You can specify a maximum value of 120 seconds (two minutes) as the refresh rate.

7. Click **OK**.

   You can continue to build and modify your chart as required.

8. When you are finished, click **Save** on the Visualization toolbar to save your chart.

9. To test and verify that your chart is being refreshed correctly, locate it on the Hub, right-click it and select **Run** from the context menu.

   Observe your chart while it is running and make a note of any adjustments that should be made. For example, if the chart is being refreshed too quickly, then you should consider increasing the number of seconds specified for the Automatic refresh option.

Disable the Automatic Refresh Option for a Chart

To disable the Automatic refresh option:

Procedure

1. Open a visualization that uses automatic refresh. On the WebFOCUS Hub, right-click a visualization and click **Edit**.

   The selected visualization opens in WebFOCUS Designer.

2. On the Settings tab, expand the Content section.

3. Clear the **Enable auto-refresh** checkbox.
4. Save your content. When it is run, your content no longer refreshes automatically.

Using Insight to Analyze Dynamic Charts

Insight is a visualization tool that allows for the interactive selection of measures and dimensions, so you can create dynamic charts that refresh as you make changes.

With Insight, you can review and analyze a chart that shows the data fields that you choose in real time. It even rebuilds as you select additional fields or specify filters.

You can make quick decisions regarding your data with Insight. Using logical menus and simple filtering, you can analyze charts interactively to suit your needs. As you select additional fields and create filters, your chart refreshes instantly, letting you see the results of your data choices as you use the tool.

Insight lets you build filters, as needed, to customize the data that displays. You can add and remove fields, at any time and in any pattern, to enhance your chart. You can take advantage of the customization options that are available to you right from the toolbar.

With Insight, the chart type determines the buckets that display. For example, if you are working with a pie chart, you can specify values for the following buckets: Measure, Rows, Columns, Color, Size, Tooltip, and Animate.

Available fields are organized into applicable Dimension and Measure categories. You can use the plus sign to add additional fields to your chart. For example, if you want to create a bar chart that plots Gross Profit, Revenue, and MSRP for each Product Category, click the plus sign to add fields using the dropdown field selector. Once you choose the fields that you want to include, you can rearrange them by dragging and dropping them into the order that you prefer.

The resulting bar chart displays, as shown in the following image.

Note: : The Save icon only displays when running an existing Insight chart from the WebFOCUS Hub or Home Page.

You can use the navigational arrows in the interactive header to move between the available buckets in your chart. The following image highlights these arrows, which shift the focus of these buckets to the right or left.

All charts support a bucket for Color, which adds contrast to your chart. Some charts also support the Size bucket, which binds a measure to the size of the markers rendered on the chart.

Once you have added fields to the relevant buckets, you can use the Sort arrows adjacent to each field ↑ to sort the data in ascending or descending order. This helps identify trends and priorities within your data. You can only sort one field at a time. Ascending order sorts your data from the smallest value to the greatest value, while descending order sorts your data from the greatest value to the smallest value, as shown in the following image.

When you select a sort order for a field, the field arrow changes color, appearing bolder than the unsorted fields. In the image below, a sort order was selected for MSRP, so the field arrow appears black.

Specify measures and dimensions for your chart in WebFOCUS Designer before using Insight. This pre-loads the Insight user interface (UI) with those selections. Optionally, you can use Insight without selecting *any* fields. In this case, the field selection options are broad, meaning that all fields is presented. An example of an empty canvas is shown in the following image.

Insight can be enabled for stand-alone charts, and you can access Insight functionality when these charts are run on their own or as part of an assembled visualization. When added to an assembled visualization, Insight-enabled charts display an icon that you can click to access Insight features. If you convert an Insight-enabled chart to a page with new content, a warning appears, alerting you that Insight functionality is not carried over.

Enable Insight From WebFOCUS Designer

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then

click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Optionally, change the chart type and add fields to the chart.

   Insight can be run with no fields applied, allowing you to create an entirely new chart in Insight.

   > **Note:** Insight is not available for reports.

4. On the Settings tab of the Properties panel, expand the Content section and select **Run with Insight**.

5. On the toolbar, click **Run in new window**.

   The chart opens with the Insight toolbar available, and you can begin modifying and analyzing your chart.

Working With Charts in Insight

With Insight, you can choose individual fields for the buckets that you add. Whether you added fields into the buckets before running Insight or left them empty, creating a chart in Insight is streamlined to allow you to easily create a dynamic chart in real time. It also provides you with the flexibility of interactive comparison as you change your data selections rapidly and adjust the options for display.

You can use the default vertical bar chart or you can specify a different chart type using the Chart Picker in the Options toolbar.

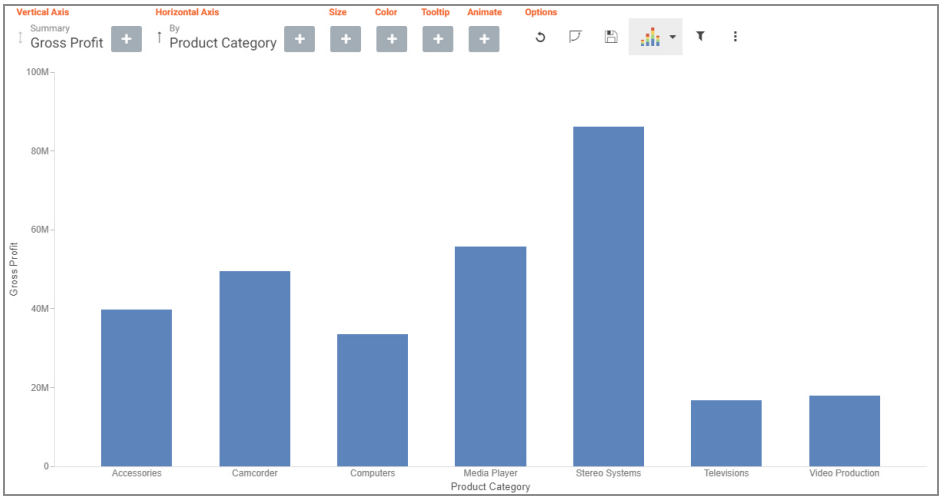
In addition, you can reorder the display of fields in your chart. This allows you to change the placement of a particular field, giving you control over where the data for this component displays in your chart.

Configure a Basic Bar Chart Using Insight

Procedure

1. Click the plus icon under the Vertical Axis bucket.
2. Choose a measure field from the dropdown list.
3. Click the plus icon under the Horizontal Axis bucket.
4. Choose a dimension field from the dropdown list.

   Your bar chart displays, as shown in the following image.

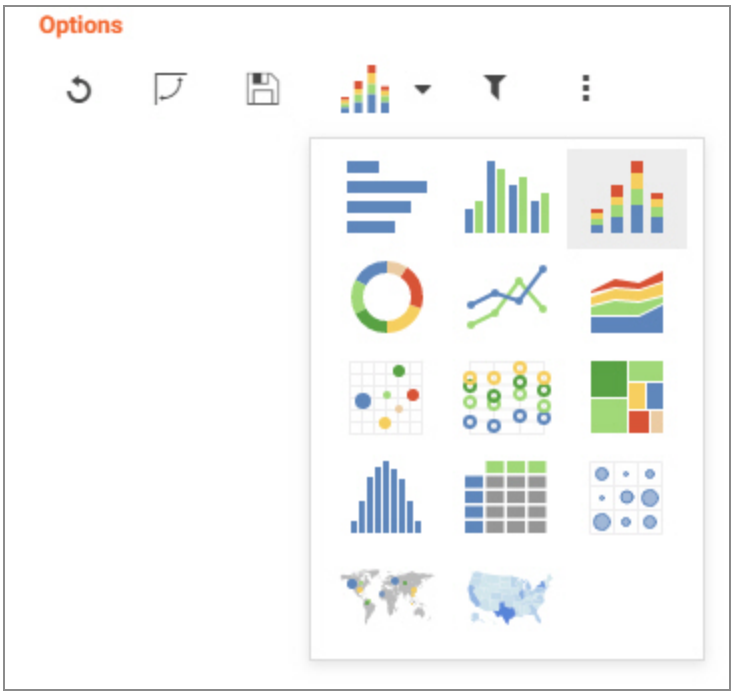


Change the Chart Type in Insight

Procedure

1. On the Options toolbar, click **Chart Picker**.

   The table of chart selections opens, as shown in the following image.



2. Select a chart type.

   Your chart refreshes with the new chart type, and the Insight interface refreshes to display all of the buckets that are relevant to the current chart type.

Delete a Field From a bucket

Procedure

1. Add one or more fields to your chart.
2. Hover over the field that you want to delete and click **X**, as shown in the following image.

   The chart refreshes to reflect your selections.

Reorder the Display of Fields in a Bucket

Procedure

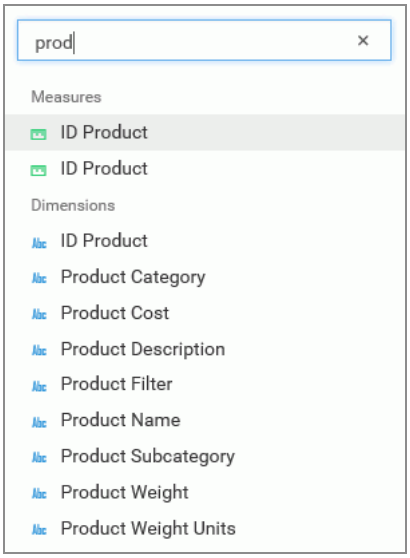
1. Add multiple fields to your chart, as shown in the following image.

2. In the Vertical Axis grouping, drag the second bucket into the first position. The placement of the field is shown by a dark blue vertical bar, as shown in the following image.

The following image shows the newly ordered fields.

Searching for Fields

You can locate fields for your buckets using the search option. On the toolbar, click the plus sign. In the search field, start typing the field that you want to locate. You can type in whole words or partial words. The search identifies all fields that contain any instance of the characters that you specify, as shown in the following image.

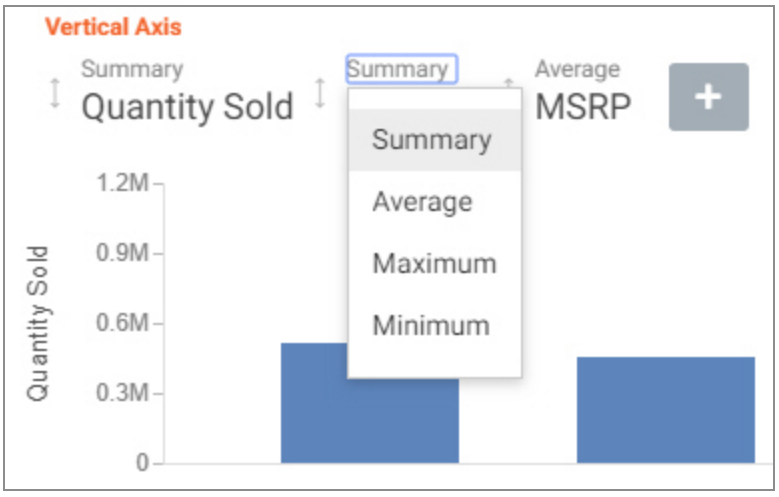


Changing Summary Operators for the Field

When working with measure fields, you can change the summary operators for the field from Summary (default) to Average, Maximum, or Minimum. You can also change a Count field to Count Distinct, using a similar menu selection.

When you make a selection, the axis of the relevant measure updates in the chart, as shown in the following image.

Options for changing the Summary field are shown in the following image.

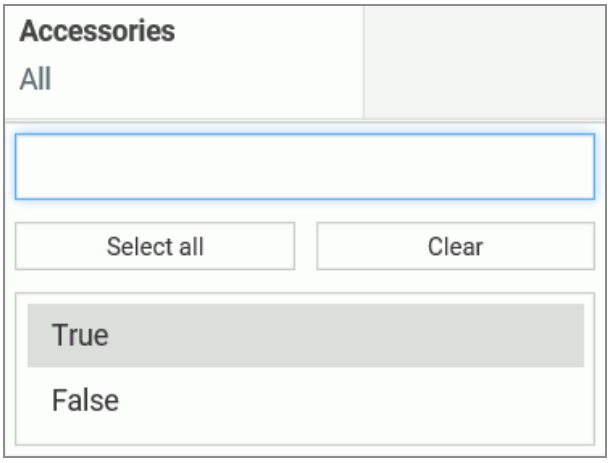


Filtering in Insight

To enable filtering, click the Show Filter icon , which is located in the Options section of the toolbar. This opens the filter shelf that renders above the bucket shelf, as shown in the following image.

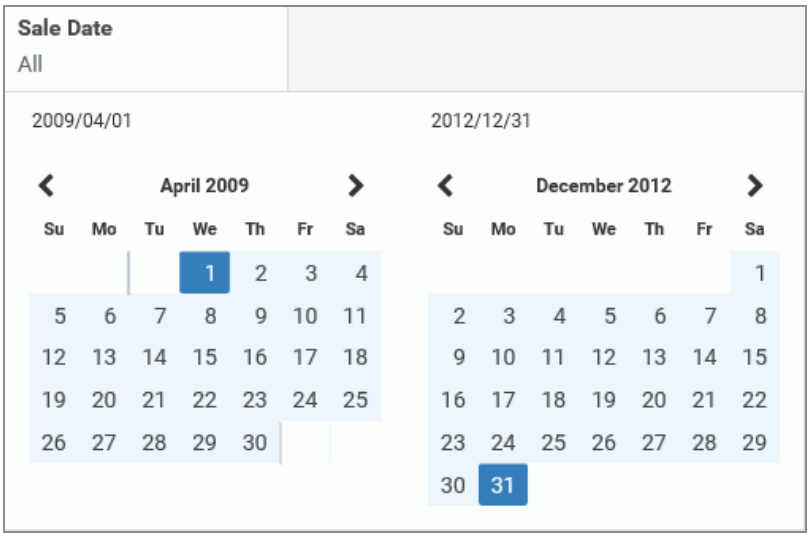
Use the filter shelf to build your filter. The filter shelf must be visible to add or modify a filter. In addition, constant value filters that were created in a procedure (.fex) or in InfoAssist, as well as all filters created in WebFOCUS Designer, are applied and display on the filter toolbar in Insight. Parameter filters created in InfoAssist, on the other hand, do not display in Insight. When Insight is enabled, prompted filters created in WebFOCUS Designer are always multi-select and optional, because single-select filters and required filters are not available in Insight.

Additionally, query variables are available in Insight and functional on the Filter shelf. Typically, query variables display in the Data pane, above the measure fields. The filter values display as True or False, rather than one and zero. In addition, you can only select one value, as shown in the following image.

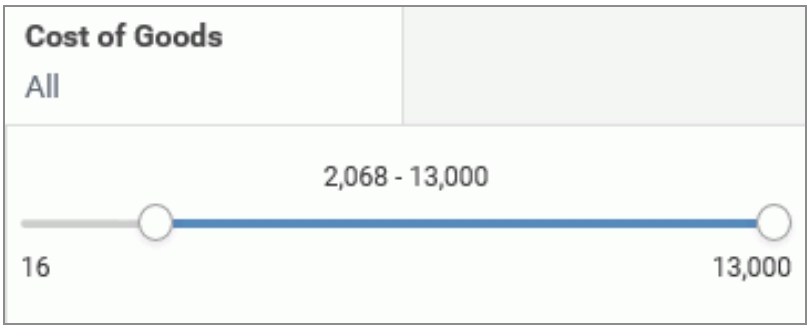


Types of Filters

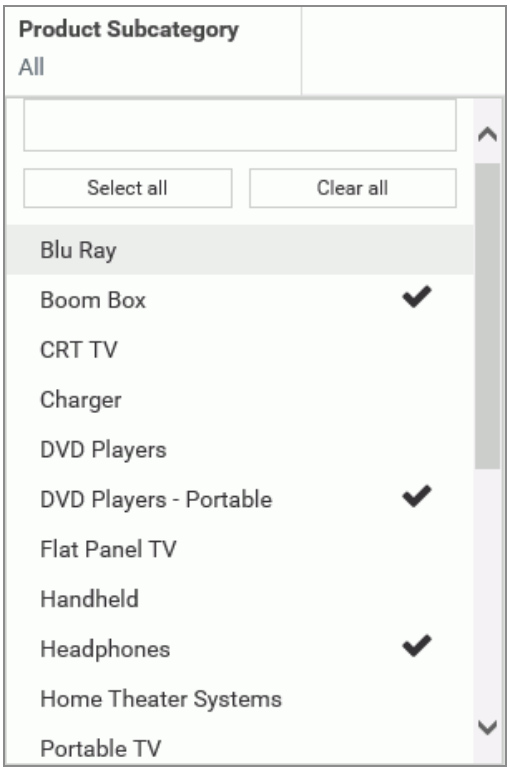
There are different types of filters in Insight. For example, if you are filtering with a date field, you can use a built-in calendar to select a date range, as shown in the following image.



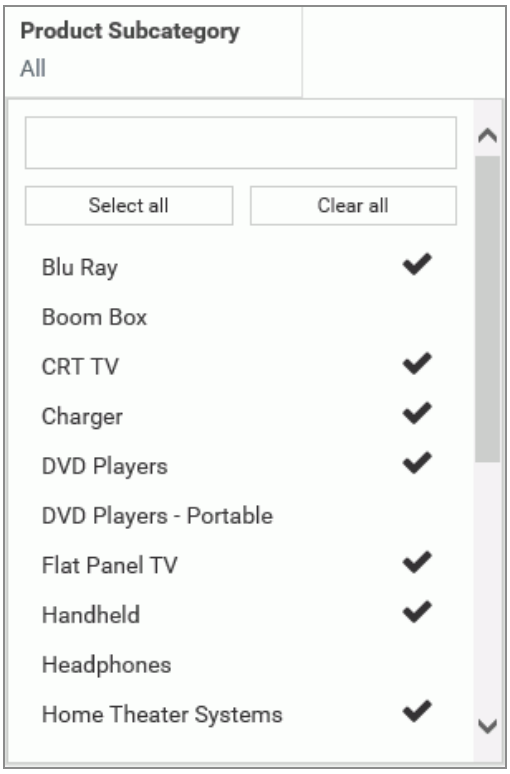
If you are filtering on a numeric value, such as a measure value, you can filter on values that are specific to a field. In this scenario, when you define the filter, a slider control opens. You can adjust the range of values that you want to include, using the slider control options, as shown in the following image.



You can also filter on dimension values. You can select one or more values by simply clicking on multiple values. A check mark appears, indicating the values selected, as shown in the following image.

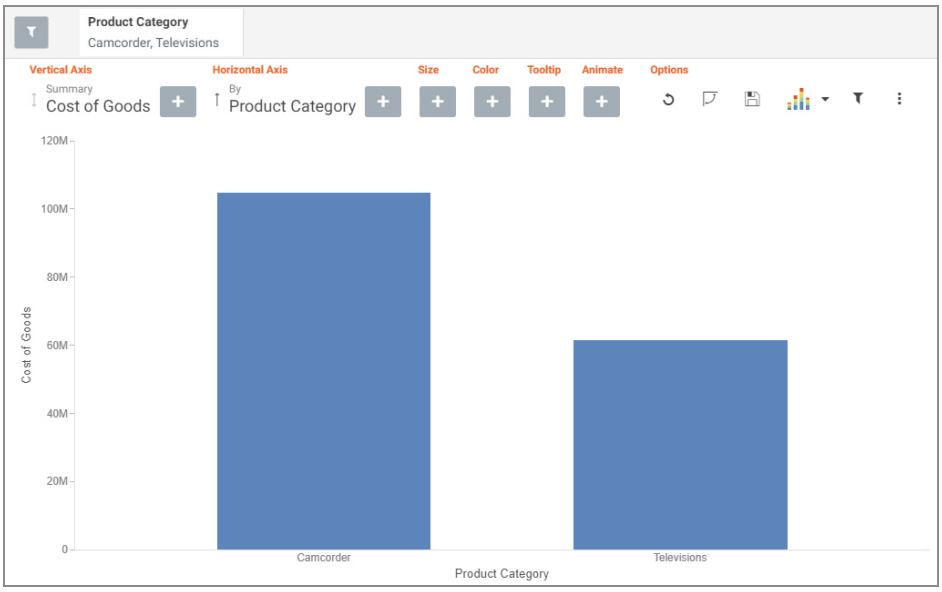


You can select all values for the dimension, select one or more, or clear all selected values, as shown in the following image.



Adding a Filter

You add a filter when you want to limit the display of your data, or drill down to focus on specific data values. For example, you may want to just display data for Camcorder and Televisions, rather than all Product Categories. You can do this by adding a filter for the Camcorder and Televisions, as shown in the following image.



Add a Filter in Insight

Procedure

1. In the Options toolbar, click **Show Filter**.

   The filter shelf opens.

2. Click the Show Filter icon.
3. From the dropdown list that opens, select the field on which to filter.
4. Click the identified field in the filter shelf to specify a value for the filter.

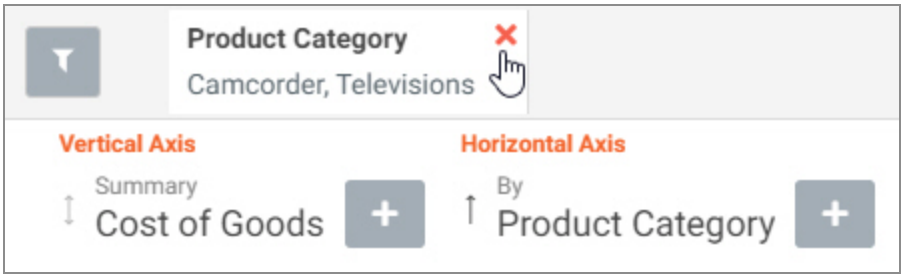
   A list displays, showing the values that you can select.

5. Click on the filter shelf to save your filtered items.

   Your chart refreshes.

Removing a Filter

To remove a filter, hover over it and click on the X, as shown in the following image.



The chart refreshes and displays your data without any filter.

Using the Options Toolbar

The Options toolbar is located in the upper-right corner of the Insight interface. These options control your interactions with your data, including options such as pivoting and filtering. You can also change your chart type using the Chart Picker option.

Options Toolbar Icons

The following section describes the icons that display on the Options toolbar.

Reset

Returns the chart to its original state. Any filters, measures, dimensions that are added in the current Insight session are reverted. The chart type is reverted, as well.

Swap Axis

Swaps the x and y axis, placing the contents of the x-axis on the y-axis. You can click **Swap Axis** again to change the chart back to its original orientation.

Save

Available when running an Insight-enabled chart from the WebFOCUS Hub or WebFOCUS Home Page. Allows you to save the Insight chart as a new file.

Chart Picker

Provides options for selecting different chart types, including:

- **Horizontal Bar.** Offers the capability of ranking data in descending order. This chart type can also be used when x-axis labels are too long to fit legibly side-by-side. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.
- **Vertical Bar.** Shows different measures per dimension component using different identifying colors. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.
- **Vertical Stacked Bar.** Stacks values per dimension component using differentiating colors. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.
- **Pie.** Presents values as part of a whole using colors to separate the segments. Pie charts emphasize where your data fits in relation to the larger whole. The following buckets are available for this chart type: Rows, Columns, Measure, Color, and Size.
- **Vertical Line.** Creates a line chart which is representative of the data. Line charts are useful for showing trends in numerical data. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.
- **Area.** Creates an area chart which is similar to a line chart except the area between the data line and the zero line (or axis) is usually filled with color. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.
- **Scatter.** Plots data using variable scales on both axes. The following buckets are available for this chart type: Rows, Columns, Vertical Axis, Horizontal Axis, Size, Detail, and Color.

> **Note:** When working with Insight Scatter or Bubble Charts, the "Show Datalabels" ability is tied to the Size bucket. Therefore, you will only see datalabels if there is a measure in the Size bucket.

- **Circle.** Plots differing values in rows, enabling you to draw inferences as to how the values overlap. The following buckets are available for this chart type: Rows, Columns, Vertical Axis, Horizontal Axis, Size, Detail, and Color.
- **Treemap.** Displays large amounts of hierarchically structured data. This chart type uses sections to represent an aspect of the selected measure. The following buckets are available for this chart type: Grouping, Size, and Color.
- **Histogram.** Analyzes the distribution of a measure while assigning it to buckets based on the values that you specify for the bins that are created. The default bin count is 10. The following buckets are available for this chart type: Rows, Columns, and Measure.
- **Table.** Presents data in tabular form, allowing you to compare various intersections in your data. The following buckets are available for this chart type: Rows, Columns, and Measure.
- **Matrix.** Analyzes one or two measures against a crosstab of two categorical dimensions. The following buckets are available for this chart type: Rows, Columns, Size, and Color.
- **Point Map.** Uses symbols of different sizes to represent data associated with different areas or locations within the map. The following buckets are available for this chart type: Layer, Size, and Color.
- **Choropleth Map.** Visualizes location-based data, trends, and distributions across a geographic area. These maps are geographically-based heat maps. The following buckets are available for this chart type: Layer and Color.

Note: The orientation of this chart icon changes if you swap an axis. In addition, the image that displays for the chart type changes, based on your selection.

Show Filter

Defines filters for your data. Select this icon, and using the filter shelf that opens above the bucket shelf, click the Show Filter icon to define a filter.

Note: To select one or more non-consecutive values, select each field. The selected values display with a check mark to indicate that they have been selected.

More Options

Opens the following additional options:

- **Export Data.** Exports the underlying data of the current chart to an Excel file in LOCAL file storage. You are alerted when the file appears in the bottom left corner, similar to any other file that you download.
- **Export Image.** Generates an image of the current chart, which is saved in PNG format to LOCAL file storage using the current width and height of the browser window.
- **Series Layout.** The bar, line, and area charts in Insight support several different sub-graph types (aka *Layout*). The supported graph types include: horizontal bar, vertical bar, vertical stacked bar, line, and area charts. For bar, line, and area charts, the Series Layout Options are as follows:
  - Horizontal Bar: Stacked, Side-by-Side, Absolute, Percent
  - Vertical Bar: Stacked, Side-by-Side, Absolute, Percent
  - Vertical Stacked Bar: Stacked, Side-by-Side, Absolute, Percent
  - Line: Stacked, Side-by-Side, Absolute, Percent
  - Vertical Stacked Area: Stacked, Side-by-Side, Absolute, Percent
- **Y-Axis Log Scale.** Adjusts the log scale on the y-axis. This option is always unchecked, by default. The following chart types are supported:
  - Horizontal Bar
  - Vertical Bar
  - Vertical Stacked Bar
  - Line
  - Area charts
  - Scatter charts

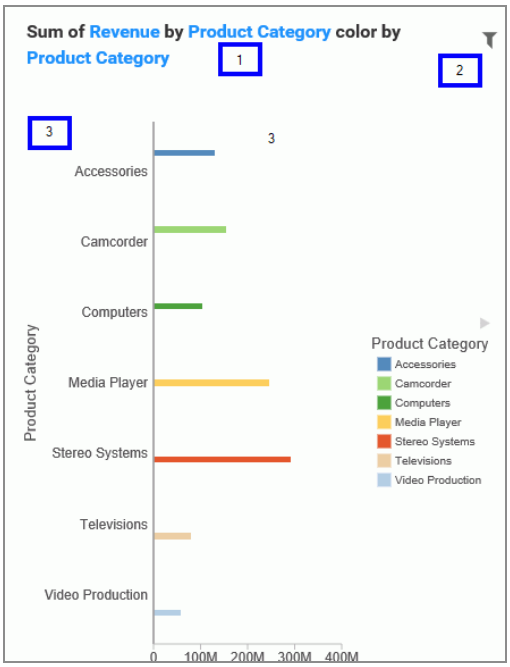
    - Circle
    - Histogram
- **X-Axis Log Scale.** Adjusts the log scale on the x-axis. This option is not always selected, by default. The following chart types are supported:
    - Scatter
    - Bubble
- **Change Bin Size.** Changes the size of the bin (numeric value only). This option is only available for histograms. Clearing the text box switches it back to automatic bin size generation.
- **Show Data Label.** Turns numeric Data labels on/off on all charts, except Grids. The default for this setting is always Off except for Treemaps.
- **Show Totals.** Turns the Summary Row Total on Data Grid on or off. The default for this setting is always False.
- **Marker Shape.** Changes the marker shape used in the matrix marker chart. Options include: Circle, Square, or Fill.

Using Insight in Phone Mode

Phone mode, which is available in Insight, allows you to take advantage of the features of Insight on your phone. The interactive heading that is available in Insight on a tablet or desktop is replaced by a static heading that displays the field names in the chart, in blue text. These become summary fields that allow you to see what fields are included in the chart.

Insight is mobile aware and mobile-friendly. Full functionality is available on tablet devices and other high-resolution touch displays. On smaller devices, such as an iPhone, Insight enters a special *phone mode* which has a useful, but more limited, set of options and features that are tuned for the small screen real-estate of the device. In this mode, you can add or modify filters to narrow your data as needed. You can also hover over data points to see the underlying data.

Measures are shown first. The first measure displays with a summation attribute (for example, Sum or Avg) and then displays *of* and then the name of the measure, as shown in the following image.



In the above image, area one is the static heading. Area two marks the filtering side option button. Lastly, area three shows the conbody of the chart.

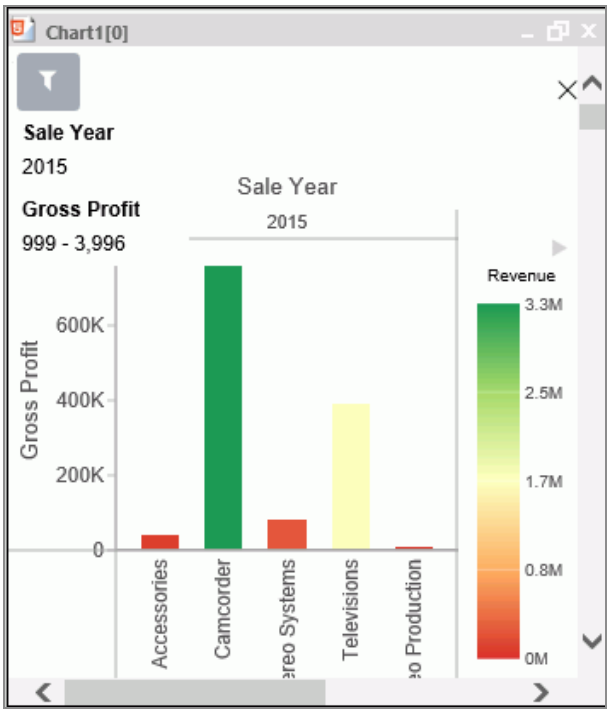
Numeric measures are displayed after the measures in the order of Y-Axis and then X-axis. If you define fields in your Grouping bucket, they display after the collective measures and are preceded by the word *by*. If you have created a matrix marker chart, the relevant buckets for these display next. They also use the word *by*, as do any Detail buckets that are populated in the chart. If your chart specifies a field for color, Phone mode precedes the display of this item with *color by*. Lastly, if you have populated the Size bucket, this displays last and is introduced by *size by*.

User Options in Phone Mode

You have a number of options in Phone mode, including robust filtering and hover capabilities.

Filtering

In Phone mode, you can filter just like in regular desktop mode. The primary difference is that the filter shelf stacks the available filters in a vertical row, as shown in the following image.



You click the filter icon to bring up the filter shelf and then you click the X to close it. If you have defined filters, closing the filter shelf merely collapses it. The filters that you defined remain intact. To remove a filter, hover over it and click the X in the upper-right corner.

General Usability

Phone mode allows you to view your chart and filter it to refine it based on your own unique scenario.

You can hover over a data bar a segment of a chart to obtain additional, detailed information from the underlying data. The tooltips that display are based on your data selections.

You can also show and hide the legend using the right arrow above the legend. When you collapse the legend, you can see more of your chart.

The opportunities for dynamic charting are vast with Insight. Using dynamic menus, filtering options, and search features, you can quickly and effectively create charts that communicate your data.

Creating Reports

You can create reports in a visualization in WebFOCUS Designer similar to the way in which you create charts. Reports allow you to communicate information at a high level of detail using a familiar tabular format. You can create a stand-alone report in a visualization, or combine multiple reports in a page.

You can create a report by creating new content in a visualization and changing the content type to a report using the Content picker. The report options in the Content picker are shown in the following image.

Three report layout options are available: a standard, tabbed report in which repeating sort values are only displayed once, a grid in which sort values repeat so that all cells of the report are filled. The third option creates a data grid, which is a type of chart that resembles a tabbed report.

The following image shows a report using the standard report layout.

Product Category	Sale Year	Quantity Sold	Revenue
Accessories	2014	20,152	$5,039,297.57
	2015	31,396	$7,860,068.93
	2016	46,735	$11,820,675.96
	2017	63,836	$16,060,415.69
	2018	139,977	$35,619,872.81
	2019	209,571	$53,208,007.57
Camcorder	2014	17,722	$5,878,431.53
	2015	28,485	$9,673,248.16
	2016	41,250	$13,971,708.11
	2017	56,782	$19,438,607.89
	2018	123,972	$42,396,539.60
	2019	187,033	$63,107,166.95

The following image shows a report using the grid layout.

Product Category	Sale Year	Quantity Sold	Revenue
Accessories	2014	20,152	$5,039,297.57
Accessories	2015	31,396	$7,860,068.93
Accessories	2016	46,735	$11,820,675.96
Accessories	2017	63,836	$16,060,415.69
Accessories	2018	139,977	$35,619,872.81
Accessories	2019	209,571	$53,208,007.57
Camcorder	2014	17,722	$5,878,431.53
Camcorder	2015	28,485	$9,673,248.16
Camcorder	2016	41,250	$13,971,708.11
Camcorder	2017	56,782	$19,438,607.89
Camcorder	2018	123,972	$42,396,539.60
Camcorder	2019	187,033	$63,107,166.95

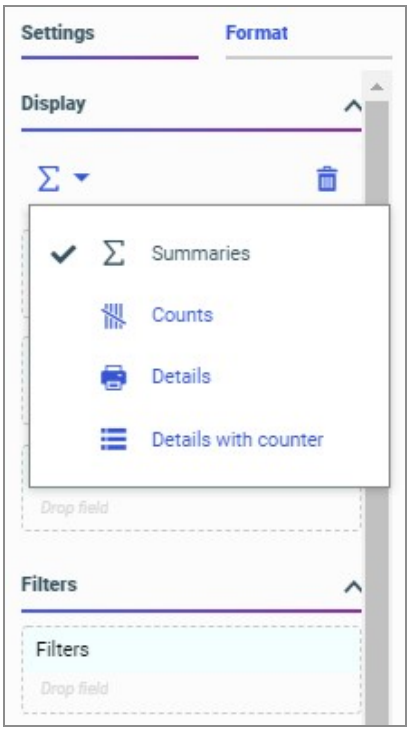
To populate the report, select measures and dimensions from the Resources panel with the Fields tab selected from the sidebar. The Resources panel displays the fields that were populated from your data source. You can add fields to your report in the following ways:

- Drag a field from the Fields tab into your content.
- Double-click a field in the Fields tab.
- Drag a field from the Fields tab into a bucket.
- Right-click a field on the Fields tab and click **Add to report**.

When you add a field to your report, the canvas updates to display the values in it.

You can define the rows and columns in a report by adding fields to the Rows and Column Groups buckets, respectively. Typically, these are dimension fields. The values in these fields are used to sort the report.

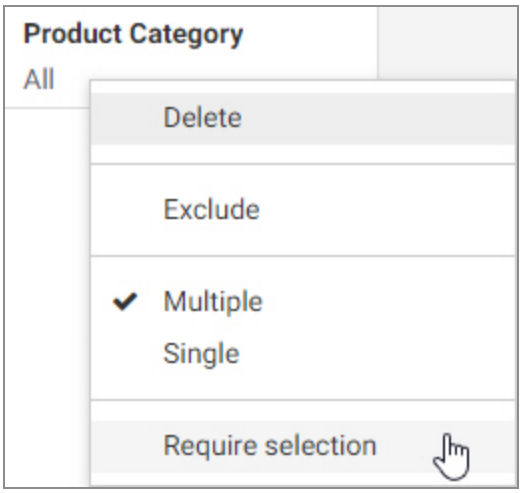
You can display aggregated values in a report by adding fields to the Summaries bucket. This bucket is usually used to display values for measure fields. The Summaries bucket displays by default, but you can change the bucket by selecting a different display option. The available display options are shown in the following image.



The Summaries and Counts options provide aggregated measure values for each sort value, that is, each row or column, in the report. The Details and Details with counter display options, on the other hand, provide a complete list of every value for the selected field or fields.

Once you have added fields to the report, you can format it to enhance its appearance or style. For example, you might want to add a header and footer to identify the information on each page of the report, or use a report template to modify the layout. You can also click the Format tab to apply a theme or change the output format of the report.

You can filter a report using prompted or static filters. To create a prompted filter, drag a field from the Fields tab to the Filter toolbar. A menu appears, allowing you to select default filter values. When a report with prompted filters is added to a visualization assembled from existing content, you can create filter controls to allow users to select their own filter values at run time. When creating a report, you can also require user selection for a prompted filter, so that the report does not run until the user makes a filter selection, by right-clicking the filter in the toolbar and clicking **Require selection**, as shown in the following image.



Static filters, on the other hand, do not allow user selection at run-time. They allow you to apply consistent filters to the report that cannot be modified at run time. To create a static filter, drag a field from the Fields tab to the Filters bucket, then specify filter values in the Add Filter dialog.

Create a Report Using WebFOCUS Designer

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, select a report layout.

4. Add sort fields to the report by dragging dimension fields from the Fields pane into the Rows and Column Groups buckets.

   Note:
   You can also double-click a dimension field or drag it onto the canvas to add it to the Rows bucket.

5. Add aggregated data values to the report by dragging measure fields from the Fields pane into the Summaries bucket.

   > **Note:**
   > You can also double-click a measure field or drag it onto the canvas to add it to the Summaries bucket, or other measure bucket if you have changed the display option.

   The report displays the selected fields, based on the bucket they were placed in.

6. The following are some of the options that you have to customize the report:
   - Select a theme from the Format tab.
   - Change the layout of the report by changing the report template from the Content picker.
   - Filter the report by dragging fields into the Filter toolbar or Filters bucket.
   - Add subtotals, page breaks, or row breaks to the report each time the value in a field changes by right-clicking a field in the Properties panel, pointing to **Insert breaks**, and selecting an option for each category.
   - Add a header or footer by selecting the header or footer area of the report and typing header or footer text.
   - Enable Auto Drill or Auto Linking, or make the report an Auto Link target, from the Content section of the Settings tab on the Settings/Format panel.
   - Add column or row totals to the report from the Content Settings section under the Setting tab of the Settings/Format panel.
7. To see a run-time view of the report, including behaviors such as Auto Drill or dynamic filtering that are not available in the canvas, click **Run in new window** on the Visualization toolbar.
8. On the WebFOCUS Designer toolbar, click **Save** to save your report to a selected location. Once saved, you can share the report and add it to a page.

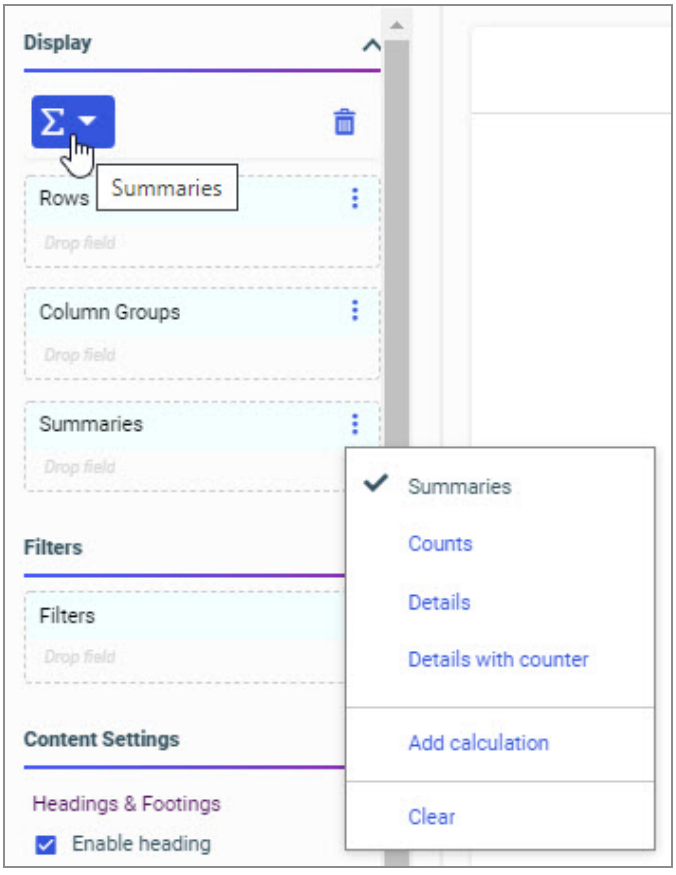
   To open the report to edit it again at a later time, locate it on the Hub or Home Page, right-click it, and click **Edit** from the shortcut menu.

Displaying Measure Values in Reports

When you add a measure field to a report using the Summaries bucket, the values in that field are aggregated, by default. This means that measure values are evaluated for each sort value in the report. This option is used when the Summaries display option Σ is selected.

By default, the values of fields in the Summaries bucket are aggregated by summing them. You can also aggregate them by average, count, count distinct, percent, percent of count, minimum, maximum, total, median, and mode values. To use one of these aggregation options, right-click a field in the Summaries bucket, point to **Aggregate**, and select an aggregation.

You can change the display method for measure values from Summaries to Counts, Details, or Details with counter to change how the fields in this bucket are evaluated. These display methods are available from the Calculation Options menu above the buckets on the Display tab, and in the menu next to the measure bucket – the Summaries bucket, by default – as shown in the following image.

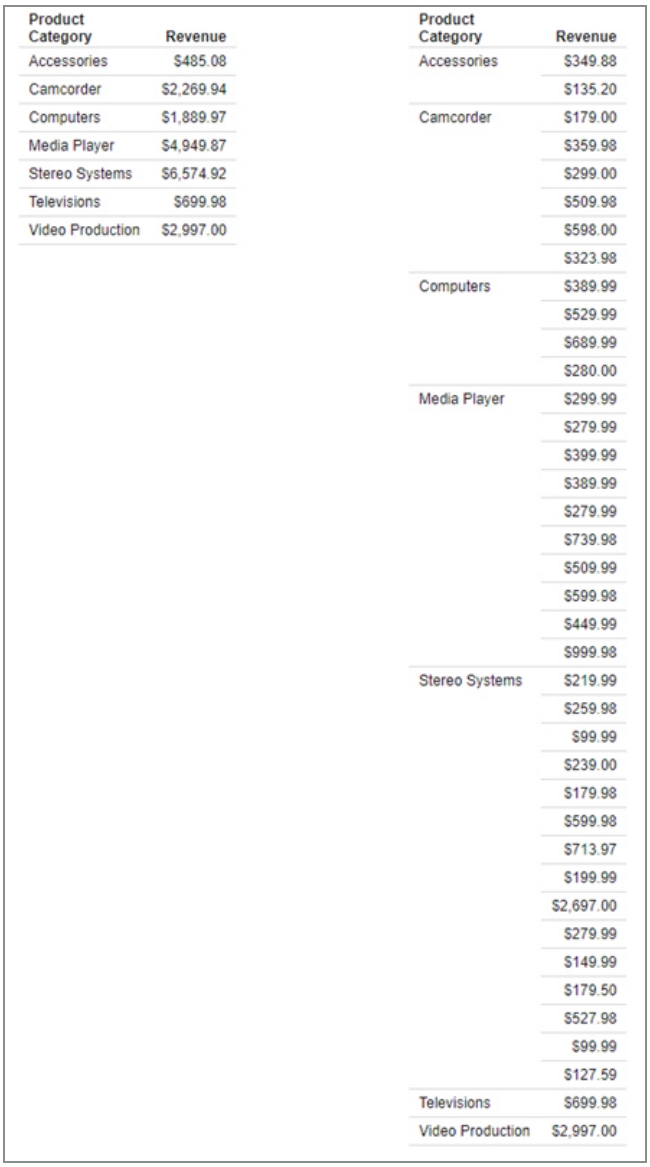


Changing the display method also changes the name of the Summaries bucket.

You can use the Counts display option as an alternative to the Count prefix operator aggregation option to provide a count of data records for all fields in the Counts bucket. A count allows you to see the distribution of your data by displaying the number of records in the selected count fields, for each sort value.

You can select the Details display option to individually display all record values for the fields in the Details bucket instead of aggregating them.

For example, the following image shows two reports. The one on the left uses the default Summaries display option, while the one on the right uses the Details display option.

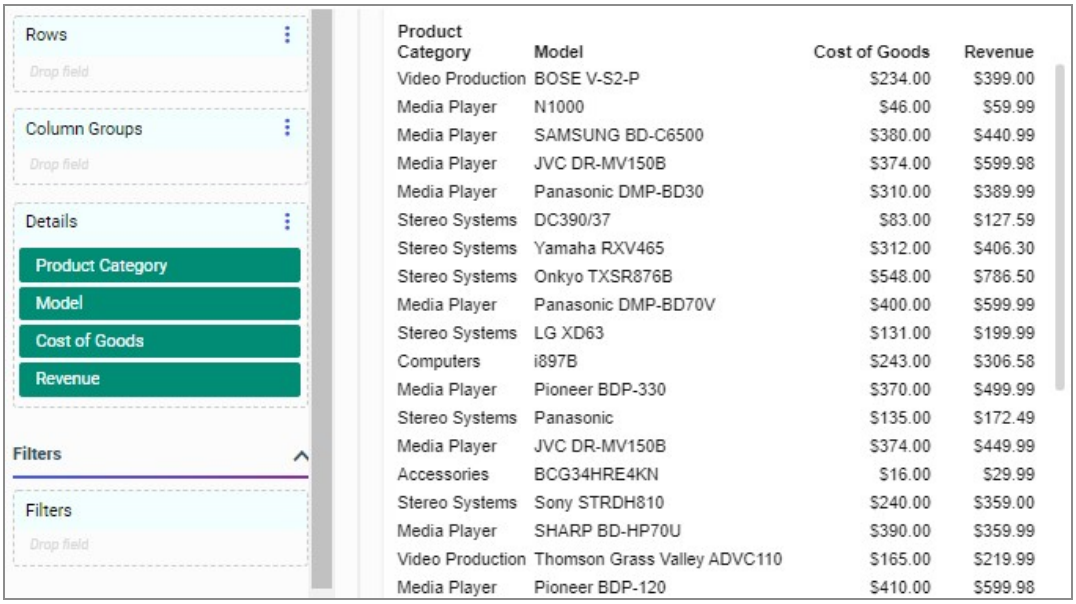


Product Category	Revenue
Accessories	$485.08
Camcorder	$2,269.94
Computers	$1,889.97
Media Player	$4,949.87
Stereo Systems	$6,574.92
Televisions	$699.98
Video Production	$2,997.00

Product Category	Revenue
Accessories	$349.88
	$135.20
Camcorder	$179.00
	$359.98
	$299.00
	$509.98
	$598.00
	$323.98
Computers	$389.99
	$529.99
	$689.99
	$280.00
Media Player	$299.99
	$279.99
	$399.99
	$389.99
	$279.99
	$739.98
	$509.99
	$599.98
	$449.99
	$999.98
Stereo Systems	$219.99
	$259.98
	$99.99
	$239.00
	$179.98
	$599.98
	$713.97
	$199.99
	$2,697.00
	$279.99
	$149.99
	$179.50
	$527.98
	$99.99
	$127.59
Televisions	$699.98
Video Production	$2,997.00

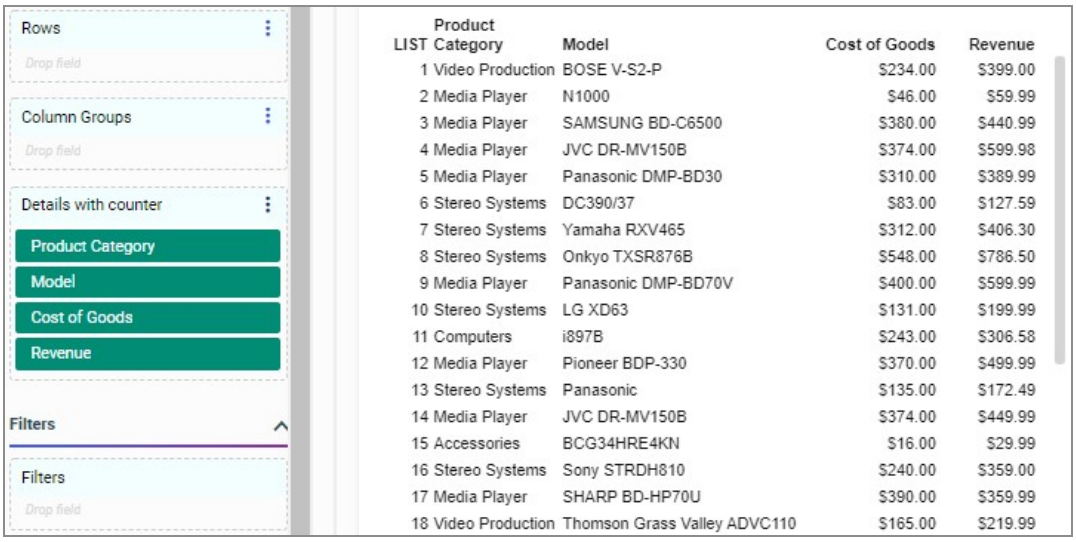
Records in a Details field are separated into groups based on the fields in the Row and Column Groups buckets, but are not individually sorted. The order in which they appear reflects the order in which they are accessed from the data source.

To see a list of the records in your data source without grouping them, for example as a data extract, you can add all desired dimension and measure fields to the Details bucket, as shown in the following image.



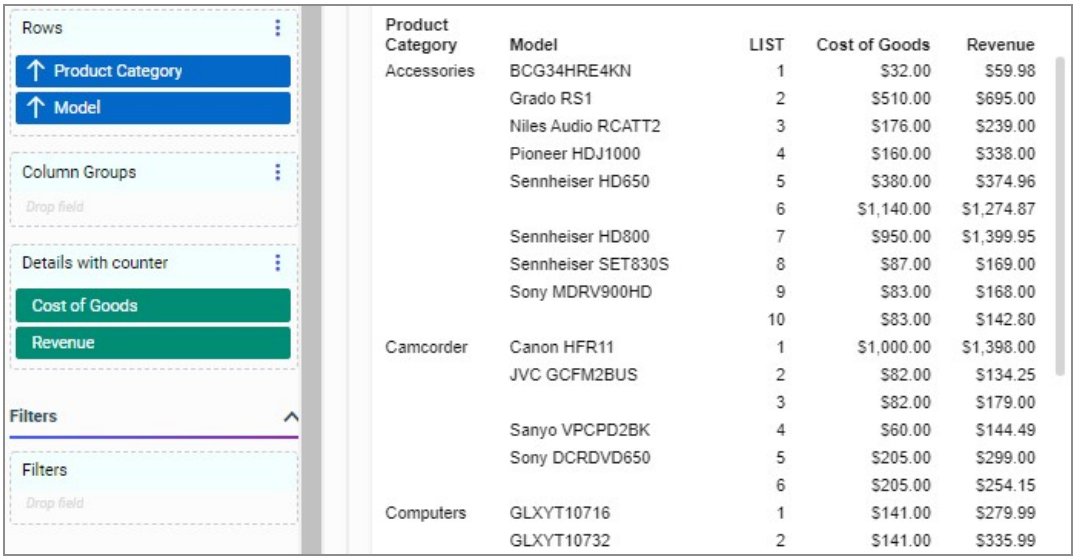
Product Category	Model	Cost of Goods	Revenue
Video Production	BOSE V-S2-P	$234.00	$399.00
Media Player	N1000	$46.00	$59.99
Media Player	SAMSUNG BD-C6500	$380.00	$440.99
Media Player	JVC DR-MV150B	$374.00	$599.98
Media Player	Panasonic DMP-BD30	$310.00	$389.99
Stereo Systems	DC390/37	$83.00	$127.59
Stereo Systems	Yamaha RXV465	$312.00	$406.30
Stereo Systems	Onkyo TXSR876B	$548.00	$786.50
Media Player	Panasonic DMP-BD70V	$400.00	$599.99
Stereo Systems	LG XD63	$131.00	$199.99
Computers	i897B	$243.00	$306.58
Media Player	Pioneer BDP-330	$370.00	$499.99
Stereo Systems	Panasonic	$135.00	$172.49
Media Player	JVC DR-MV150B	$374.00	$449.99
Accessories	BCG34HRE4KN	$16.00	$29.99
Stereo Systems	Sony STRDH810	$240.00	$359.00
Media Player	SHARP BD-HP70U	$390.00	$359.99
Video Production	Thomson Grass Valley ADVC110	$165.00	$219.99
Media Player	Pioneer BDP-120	$410.00	$599.98

You can also use the Details with counter display option to display individual values in the report and number them. This can be useful if you want to display records from your data source and provide a key value, such as a record ID number, for each one, as shown in the following image.



LIST	Product Category	Model	Cost of Goods	Revenue
1	Video Production	BOSE V-S2-P	$234.00	$399.00
2	Media Player	N1000	$46.00	$59.99
3	Media Player	SAMSUNG BD-C6500	$380.00	$440.99
4	Media Player	JVC DR-MV150B	$374.00	$599.98
5	Media Player	Panasonic DMP-BD30	$310.00	$389.99
6	Stereo Systems	DC390/37	$83.00	$127.59
7	Stereo Systems	Yamaha RXV465	$312.00	$406.30
8	Stereo Systems	Onkyo TXSR876B	$548.00	$786.50
9	Media Player	Panasonic DMP-BD70V	$400.00	$599.99
10	Stereo Systems	LG XD63	$131.00	$199.99
11	Computers	i897B	$243.00	$306.58
12	Media Player	Pioneer BDP-330	$370.00	$499.99
13	Stereo Systems	Panasonic	$135.00	$172.49
14	Media Player	JVC DR-MV150B	$374.00	$449.99
15	Accessories	BCG34HRE4KN	$16.00	$29.99
16	Stereo Systems	Sony STRDH810	$240.00	$359.00
17	Media Player	SHARP BD-HP70U	$390.00	$359.99
18	Video Production	Thomson Grass Valley ADVC110	$165.00	$219.99

When there are fields in the Rows bucket, the Details with counter display option generates a numbered list based on the primary sort field, but places it before the measure columns in the report. Notice that in the following image, the report is sorted by Product Category and Model, so the record list column appears to the right of the Model column, but the counter resets only on each Product Category value.



Product Category	Model	LIST	Cost of Goods	Revenue
Accessories	BCG34HRE4KN	1	$32.00	$59.98
	Grado RS1	2	$510.00	$695.00
	Niles Audio RCATT2	3	$176.00	$239.00
	Pioneer HDJ1000	4	$160.00	$338.00
	Sennheiser HD650	5	$380.00	$374.96
		6	$1,140.00	$1,274.87
	Sennheiser HD800	7	$950.00	$1,399.95
	Sennheiser SET830S	8	$87.00	$169.00
	Sony MDRV900HD	9	$83.00	$168.00
		10	$83.00	$142.80
Camcorder	Canon HFR11	1	$1,000.00	$1,398.00
	JVC GCFM2BUS	2	$82.00	$134.25
		3	$82.00	$179.00
	Sanyo VPCPD2BK	4	$60.00	$144.49
	Sony DCRDVD650	5	$205.00	$299.00
		6	$205.00	$254.15
Computers	GLXYT10716	1	$141.00	$279.99
	GLXYT10732	2	$141.00	$335.99

Since the Details and Details with counter display options create a row in the report for every record in the data source, be careful when using them with larger data sources.

Adding Column and Row Totals to a Report

You can summarize the measure data in a report by adding column and row totals. Column totals provide a grand total of each measure column in a report, while row totals provide a grand total of each row in a report, summing multiple measure values.

To add column totals to a report, on the Content section of the Settings tab of the Properties panel, click **Enable column totals** or **Recalculate totals**.

The Enable column totals option provides a sum total for each column. As shown in the following image, the values in each measure column are summed into total values. Columns created by dimension fields in the Column Groups bucket are treated as separate columns for this purpose.

	Sale,Year	2014		2015		2016	
Product Category	Sale Quarter	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue
Accessories	1	4,580	$1,125,123.02	7,121	$1,800,068.41	11,964	$3,048,787.53
	2	4,662	$1,165,106.04	7,323	$1,827,354.16	10,713	$2,695,679.25
	3	4,783	$1,270,872.45	7,893	$1,964,121.52	11,049	$2,760,894.18
	4	6,127	$1,478,196.06	9,059	$2,268,524.84	13,009	$3,315,315.00
Computers	1	1,343	$302,839.60	2,723	$545,285.69	4,622	$935,868.89
	2	1,235	$285,463.66	2,726	$555,012.38	4,211	$859,932.09
	3	1,659	$349,989.27	3,170	$646,064.08	4,579	$969,684.35
	4	2,493	$503,542.66	3,620	$733,129.43	6,408	$1,405,264.26
Media Player	1	11,717	$3,427,197.08	12,067	$3,851,602.64	16,372	$5,239,161.93
	2	11,618	$3,268,394.69	10,264	$3,313,925.34	15,304	$4,981,985.38
	3	12,688	$3,585,613.72	11,422	$3,727,532.88	15,931	$5,098,038.72
	4	14,943	$4,699,372.86	13,379	$4,239,470.35	18,700	$6,084,901.35
Televisions	1	3,925	$1,566,904.80	1,437	$1,096,511.50	2,070	$1,686,377.91
	2	3,748	$1,577,021.42	1,331	$1,074,107.17	1,845	$1,481,739.79
	3	4,301	$1,796,316.25	1,371	$1,181,674.36	1,936	$1,654,188.98
	4	4,431	$1,540,975.20	1,668	$1,385,646.13	2,520	$2,036,387.03
TOTAL		**94,253**	**$27,942,928.78**	**96,574**	**$30,210,030.88**	**141,233**	**$44,254,206.64**

Alternatively, you can use a recomputed total to provide summed totals for measure fields from the data source but recalculate the total values for computed fields created in a report. To add a recomputed total to a report, on the Content Settings section of the Settings tab of the Settings/Format panel, click **Recalculate totals**. Values for each measure field are recomputed after each value in the selected field.

For example, perhaps you have created a report that includes a calculated field, Revenue Per Item, that is evaluated after aggregation from Revenue divided by Quantity Sold. The

following image shows a report containing that field, with summed totals added using the Enable column totals option.

Product Category	Sale,Year Sale Quarter	2014		2015		2016	
		Revenue	Revenue Per Item	Revenue	Revenue Per Item	Revenue	Revenue Per Item
Accessories	1	$1,125,123.02	$245.66	$1,800,068.41	$252.78	$3,048,787.53	$254.83
	2	$1,165,106.04	$249.92	$1,827,354.16	$249.54	$2,695,679.25	$251.63
	3	$1,270,872.45	$265.71	$1,964,121.52	$248.84	$2,760,894.18	$249.88
	4	$1,478,196.06	$241.26	$2,268,524.84	$250.42	$3,315,315.00	$254.85
Camcorder	1	$1,225,199.72	$316.34	$2,304,019.65	$356.16	$3,452,156.37	$338.48
	2	$1,244,408.92	$326.45	$2,073,189.24	$320.18	$3,339,495.11	$334.08
	3	$1,536,974.19	$353.65	$2,529,194.52	$350.84	$3,385,661.95	$344.25
	4	$1,871,848.70	$328.91	$2,766,844.75	$332.07	$3,794,394.68	$338.18
Media Player	1	$3,427,197.08	$292.50	$3,851,602.64	$319.18	$5,239,161.93	$320.01
	2	$3,268,394.69	$281.32	$3,313,925.34	$322.87	$4,981,985.38	$325.53
	3	$3,585,613.72	$282.60	$3,727,532.88	$326.35	$5,098,038.72	$320.01
	4	$4,699,372.86	$314.49	$4,239,470.35	$316.87	$6,084,901.35	$325.40
Televisions	1	$1,566,904.80	$399.21	$1,096,511.50	$763.06	$1,686,377.91	$814.68
	2	$1,577,021.42	$420.76	$1,074,107.17	$806.99	$1,481,739.79	$803.11
	3	$1,796,316.25	$417.65	$1,181,674.36	$861.91	$1,654,188.98	$854.44
	4	$1,540,975.20	$347.77	$1,385,646.13	$830.72	$2,036,387.03	$808.09
TOTAL		**$32,379,525.12**	**$5,084.20**	**$37,403,787.46**	**$6,908.79**	**$54,055,165.16**	**$6,937.43**

The total row contains summed values for the Revenue and Revenue Per Item fields.

By contrast, the following image shows the same report, but with recomputed totals, using the Recalculate totals option, instead.

Product Category	Sale,Year Sale Quarter	2014		2015		2016	
		Revenue	Revenue Per Item	Revenue	Revenue Per Item	Revenue	Revenue Per Item
Accessories	1	$1,125,123.02	$245.66	$1,800,068.41	$252.78	$3,048,787.53	$254.83
	2	$1,165,106.04	$249.92	$1,827,354.16	$249.54	$2,695,679.25	$251.63
	3	$1,270,872.45	$265.71	$1,964,121.52	$248.84	$2,760,894.18	$249.88
	4	$1,478,196.06	$241.26	$2,268,524.84	$250.42	$3,315,315.00	$254.85
Camcorder	1	$1,225,199.72	$316.34	$2,304,019.65	$356.16	$3,452,156.37	$338.48
	2	$1,244,408.92	$326.45	$2,073,189.24	$320.18	$3,339,495.11	$334.08
	3	$1,536,974.19	$353.65	$2,529,194.52	$350.84	$3,385,661.95	$344.25
	4	$1,871,848.70	$328.91	$2,766,844.75	$332.07	$3,794,394.68	$338.18
Media Player	1	$3,427,197.08	$292.50	$3,851,602.64	$319.18	$5,239,161.93	$320.01
	2	$3,268,394.69	$281.32	$3,313,925.34	$322.87	$4,981,985.38	$325.53
	3	$3,585,613.72	$282.60	$3,727,532.88	$326.35	$5,098,038.72	$320.01
	4	$4,699,372.86	$314.49	$4,239,470.35	$316.87	$6,084,901.35	$325.40
Televisions	1	$1,566,904.80	$399.21	$1,096,511.50	$763.06	$1,686,377.91	$814.68
	2	$1,577,021.42	$420.76	$1,074,107.17	$806.99	$1,481,739.79	$803.11
	3	$1,796,316.25	$417.65	$1,181,674.36	$861.91	$1,654,188.98	$854.44
	4	$1,540,975.20	$347.77	$1,385,646.13	$830.72	$2,036,387.03	$808.09
TOTAL		**$32,379,525.12**	**$307.66**	**$37,403,787.46**	**$331.54**	**$54,055,165.16**	**$332.31**

In this report, the total values in the Revenue Per Item columns are recomputed for the entire report, since Revenue Per Item is a calculated field. On the other hand, the Revenue columns are still summed, since they come from the data source.

Note that the Recalculate totals option does not reapply prefix operators. Fields with prefix operators are summed just as they would be when applying a regular subtotal. Only COMPUTE fields, which are calculated fields evaluated after data aggregation, are recalculated.

When column totals are enabled, they display below the data in the report by default. Select the **Show totals above detail** checkbox to show the column totals above the data values.

Note: The **Show totals above detail** option is reflected only at run-time.

You can also add row totals to a report to generate summed grand totals for each row of the report. To add row totals, on the Content Settings section of the Settings tab of the Settings/Format panel, click **Enable row totals**.

Row totals behave differently depending on whether or not fields have been placed into the Column Groups bucket. If there are no fields in the Column Groups bucket, then all measure columns in the report are summed in a single Total column, as shown in the following image.

Product Category	Sale Quarter	Cost of Goods	Discount	Gross Profit	TOTAL
Accessories	1	$4,147,248.00	$280,171.28	$1,826,730.96	**$6,254,150.24**
	2	$3,925,748.00	$269,670.58	$1,762,391.45	**$5,957,810.03**
	3	$4,166,868.00	$297,293.76	$1,829,020.15	**$6,293,181.91**
	4	$4,887,672.00	$334,687.80	$2,174,363.90	**$7,396,723.70**
Camcorder	1	$4,754,152.00	$331,388.92	$2,227,223.74	**$7,312,764.66**
	2	$4,479,378.00	$291,023.13	$2,177,715.27	**$6,948,116.40**
	3	$5,086,129.00	$341,115.23	$2,365,701.66	**$7,792,945.89**
	4	$5,702,159.00	$380,644.79	$2,730,929.13	**$8,813,732.92**
Media Player	1	$9,475,832.00	$577,328.70	$3,042,129.65	**$13,095,290.35**
	2	$8,796,078.00	$548,854.63	$2,768,227.41	**$12,113,160.04**
	3	$9,441,755.00	$577,436.23	$2,969,430.32	**$12,988,621.55**
	4	$11,419,820.00	$670,837.94	$3,603,924.56	**$15,694,582.50**
Televisions	1	$3,376,862.00	$212,974.63	$972,932.21	**$4,562,768.84**
	2	$3,199,280.00	$177,866.59	$933,588.38	**$4,310,734.97**
	3	$3,597,757.00	$218,950.77	$1,034,422.59	**$4,851,130.36**
	4	$3,861,098.00	$240,878.10	$1,101,910.36	**$5,203,886.46**

In this case, ensure that it makes sense to sum all of the measure fields in your report before adding row totals.

If there is a field in the Column Groups bucket, then instead of summing all columns, the row totals are evaluated for each measure field in the report, as shown in the following image.

Product Category	Sale,Year Sale Quarter	2014			2015			TOTAL		
		Cost of Goods	Gross Profit	Discount	Cost of Goods	Gross Profit	Discount	Cost of Goods	Gross Profit	Discount
Accessories	1	$777,258.00	$347,865.02	$50,602.84	$1,247,419.00	$552,649.41	$82,917.59	**$2,024,677.00**	**$900,514.43**	**$133,520.43**
	2	$802,494.00	$362,612.04	$49,781.08	$1,264,225.00	$563,129.16	$95,902.64	**$2,066,719.00**	**$925,741.20**	**$145,683.72**
	3	$880,799.00	$390,073.45	$59,202.81	$1,369,215.00	$594,906.52	$107,491.12	**$2,250,014.00**	**$984,979.97**	**$166,693.93**
	4	$1,020,119.00	$458,077.06	$71,363.50	$1,570,383.00	$698,141.84	$112,769.64	**$2,590,502.00**	**$1,156,218.90**	**$184,133.14**
Camcorder	1	$818,542.00	$406,657.72	$56,378.48	$1,579,534.00	$724,485.65	$103,048.85	**$2,398,076.00**	**$1,131,143.37**	**$159,427.33**
	2	$835,003.00	$409,405.92	$50,411.08	$1,391,888.00	$681,301.24	$92,612.67	**$2,226,891.00**	**$1,090,707.16**	**$143,023.75**
	3	$1,052,933.00	$484,041.19	$69,871.23	$1,716,879.00	$812,315.52	$108,335.05	**$2,769,812.00**	**$1,296,356.71**	**$178,206.28**
	4	$1,263,634.00	$608,214.70	$90,550.44	$1,863,074.00	$903,770.75	$114,996.73	**$3,126,708.00**	**$1,511,985.45**	**$205,547.17**
Media Player	1	$2,501,895.00	$925,302.08	$159,626.31	$2,931,536.00	$920,066.64	$174,497.18	**$5,433,431.00**	**$1,845,368.72**	**$334,123.49**
	2	$2,374,278.00	$894,116.69	$158,289.65	$2,560,704.00	$753,221.34	$152,032.54	**$4,934,982.00**	**$1,647,338.03**	**$310,322.19**
	3	$2,608,682.00	$976,931.72	$170,160.00	$2,886,848.00	$840,684.88	$175,923.44	**$5,495,530.00**	**$1,817,616.60**	**$346,083.44**
	4	$3,448,771.00	$1,250,601.86	$203,938.43	$3,265,462.00	$974,008.35	$193,946.69	**$6,714,233.00**	**$2,224,610.21**	**$397,885.12**
Televisions	1	$1,181,889.00	$385,015.80	$76,501.32	$863,061.00	$233,450.50	$51,326.91	**$2,044,950.00**	**$618,466.30**	**$127,828.23**
	2	$1,189,422.00	$387,599.42	$67,015.51	$847,804.00	$226,303.17	$51,345.34	**$2,037,226.00**	**$613,902.59**	**$118,360.85**
	3	$1,353,177.00	$443,139.25	$81,211.36	$932,960.00	$248,714.36	$52,323.16	**$2,286,137.00**	**$691,853.61**	**$133,534.52**
	4	$1,167,172.00	$373,803.20	$84,834.80	$1,097,664.00	$287,982.13	$66,130.70	**$2,264,836.00**	**$661,785.33**	**$150,965.50**

Note that row totals provide sum values for the measures in each row, including instances when the report includes calculated fields.

If your report includes both column totals and row totals, then column totals are evaluated for any row total columns, as shown in the following image.

Product Category	Sale,Year Sale Quarter	2014		2015		2016		TOTAL	
		Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold
Accessories	1	$1,125,123.02	4,580	$1,800,068.41	7,121	$3,048,787.53	11,964	**$5,973,978.96**	**23,665**
	2	$1,165,106.04	4,662	$1,827,354.16	7,323	$2,695,679.25	10,713	**$5,688,139.45**	**22,698**
	3	$1,270,872.45	4,783	$1,964,121.52	7,893	$2,760,894.18	11,049	**$5,995,888.15**	**23,725**
	4	$1,478,196.06	6,127	$2,268,524.84	9,059	$3,315,315.00	13,009	**$7,062,035.90**	**28,195**
Camcorder	1	$1,225,199.72	3,873	$2,304,019.65	6,469	$3,452,156.37	10,199	**$6,981,375.74**	**20,541**
	2	$1,244,408.92	3,812	$2,073,189.24	6,475	$3,339,495.11	9,996	**$6,657,093.27**	**20,283**
	3	$1,536,974.19	4,346	$2,529,194.52	7,209	$3,385,661.95	9,835	**$7,451,830.66**	**21,390**
	4	$1,871,848.70	5,691	$2,766,844.75	8,332	$3,794,394.68	11,220	**$8,433,088.13**	**25,243**
Media Player	1	$3,427,197.08	11,717	$3,851,602.64	12,067	$5,239,161.93	16,372	**$12,517,961.65**	**40,156**
	2	$3,268,394.69	11,618	$3,313,925.34	10,264	$4,981,985.38	15,304	**$11,564,305.41**	**37,186**
	3	$3,585,613.72	12,688	$3,727,532.88	11,422	$5,098,038.72	15,931	**$12,411,185.32**	**40,041**
	4	$4,699,372.86	14,943	$4,239,470.35	13,379	$6,084,901.35	18,700	**$15,023,744.56**	**47,022**
Televisions	1	$1,566,904.80	3,925	$1,096,511.50	1,437	$1,686,377.91	2,070	**$4,349,794.21**	**7,432**
	2	$1,577,021.42	3,748	$1,074,107.17	1,331	$1,481,739.79	1,845	**$4,132,868.38**	**6,924**
	3	$1,796,316.25	4,301	$1,181,674.36	1,371	$1,654,188.98	1,936	**$4,632,179.59**	**7,608**
	4	$1,540,975.20	4,431	$1,385,646.13	1,668	$2,036,387.03	2,520	**$4,963,008.36**	**8,619**
TOTAL		**$32,379,525.12**	**105,245**	**$37,403,787.46**	**112,820**	**$54,055,165.16**	**162,663**	**$123,838,477.74**	**380,728**

Adding Data Bars to Reports

To enhance numeric reports with data bars:

1. Open the desired report containing numeric measure fields in the authoring environment.
2. In the buckets, locate the numeric measure field to which data bars are to be added.
3. Right-click the selected numeric measure field.
4. From the context menu, select the **Add Data Bars** option.
5. Data bars immediately appear within the corresponding cells in the report, providing an instant visual representation of the numeric values.

Managing Data Bar Appearance

- **Default Colors**: Data bars automatically use theme-defined colors for positive and negative values. If no theme color is set, they default to black.
- **Customization**: Individual positive and negative colors can be set for each measure field for tailored visual emphasis.
- **Removing Data Bars**: If data bars are already applied to a field, the right-click menu option changes to **Remove Data Bars** for easy toggling.

Using Breaks and Subtotals in a Report

Breaks and subtotals allow you to divide a report into smaller sections for more granular analysis and a more digestible view of your data. These sections are generated for each value in a selected Row field or after the last value of a selected Column Group field.

To apply a break or subtotal, right-click a field in the Rows or Column Groups bucket, point to **Insert breaks**, and select an option. Three categories of options are available for row fields: Subtotals, Page breaks, and Row breaks. You can select an option for each of these categories in each row field of a report. For columnar sort fields, only the Subtotal options are available.

Note: The responsive canvas, used for the AHTML and HTML5 output formats, uses AHTML In-Document Analytic capabilities to enable interactive options at design time. When creating a report, page and row break settings are not supported on this canvas, or at runtime when using the AHTML output format. If you select an output format that uses the paginated canvas, such as HTML, PDF, PPTX, or XLSX, you see these breaks at design time and at runtime.

Using Breaks and Subtotals on Rows in a Report

The Subtotal options allow you to add a subtotal or recompute row after each value in the selected field. Subtotals and recomputes do not add page breaks to a report.

To add a subtotal, right-click a field in the Rows bucket, point to **Insert breaks**, and click **Aggregate columns**. A subtotal row is added for each value in the selected field and evaluated for each measure field in the report.

The selected field does not need to be the primary sort field. For example, the following image shows a report with subtotals for Product Subcategory, the secondary sort field, but not Product Category, the primary sort field. You can add subtotals for each sort field separately.

Product Category	Product Subcategory	Sale Year	Revenue
Accessories	Charger	2014	$158,015.56
		2015	$248,167.29
		2016	$374,562.24
		2017	$493,220.38
		2018	$1,101,388.29
		2019	$1,647,481.15
Subtotal Charger			**$4,022,834.91**
	Headphones	2014	$2,914,047.37
		2015	$4,612,931.48
		2016	$6,899,210.86
		2017	$9,332,629.55
		2018	$21,114,466.12
		2019	$31,313,302.59
Subtotal Headphones			**$76,186,587.97**
	Universal Remote Controls	2014	$1,967,234.64
		2015	$2,998,970.16
		2016	$4,546,902.86
		2017	$6,234,565.76
		2018	$13,404,018.40
		2019	$20,247,223.83
Subtotal Universal Remote Controls			**$49,398,915.65**

Alternatively, you can use the recompute option to provide summed totals for fields from the data source but recalculate the total values for computed fields created in a report. To add recompute rows to a report, right-click a field in the Rows bucket, point to **Insert breaks**, and click **Recalculate totals**. Values for each measure field are recomputed after each value in the selected field.

For example, perhaps you have created a report that includes a calculated field, Revenue Per Item that is evaluated after aggregation from Revenue divided by Quantity Sold. The following image shows a report containing that field, with subtotals added using the Aggregate columns option.

Product Category	Product Subcategory	Sale Year	Revenue	Revenue Per Item
Accessories	Charger	2014	$158,015.56	$38.74
		2015	$248,167.29	$38.32
		2016	$374,562.24	$38.23
		2017	$493,220.38	$38.02
		2018	$1,101,388.29	$38.31
		2019	$1,647,481.15	$38.15
Subtotal Charger			**$4,022,834.91**	**$229.77**
	Headphones	2014	$2,914,047.37	$323.68
		2015	$4,612,931.48	$328.56
		2016	$6,899,210.86	$335.56
		2017	$9,332,629.55	$328.11
		2018	$21,114,466.12	$335.68
		2019	$31,313,302.59	$335.25
Subtotal Headphones			**$76,186,587.97**	**$1,986.84**
	Universal Remote Controls	2014	$1,967,234.64	$278.25
		2015	$2,998,970.16	$275.67
		2016	$4,546,902.86	$277.62
		2017	$6,234,565.76	$278.11
		2018	$13,404,018.40	$277.34
		2019	$20,247,223.83	$277.42
Subtotal Universal Remote Controls			**$49,398,915.65**	**$1,664.40**

The subtotal rows each contain summed values for the Revenue and Revenue Per Item fields.

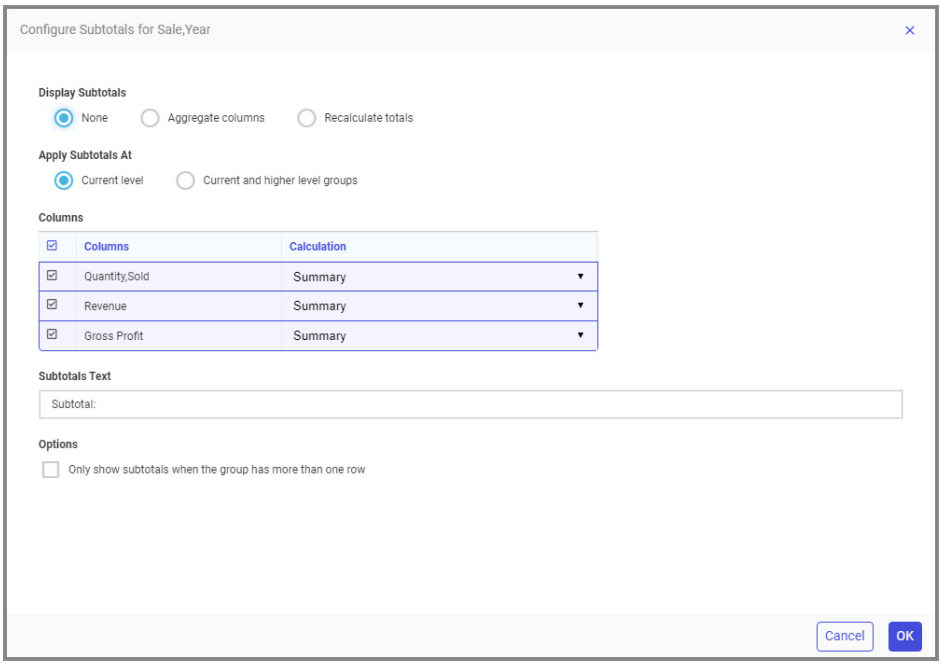
By contrast, the following image shows the same report, but with recomputes, using the Recalculate totals option, instead.

Product Category	Product Subcategory	Sale Year	Revenue	Revenue Per Item
Accessories	Charger	2014	$158,015.56	$38.74
		2015	$248,167.29	$38.32
		2016	$374,562.24	$38.23
		2017	$493,220.38	$38.02
		2018	$1,101,388.29	$38.31
		2019	$1,647,481.15	$38.15
Subtotal Charger			**$4,022,834.91**	**$38.22**
	Headphones	2014	$2,914,047.37	$323.68
		2015	$4,612,931.48	$328.56
		2016	$6,899,210.86	$335.56
		2017	$9,332,629.55	$328.11
		2018	$21,114,466.12	$335.68
		2019	$31,313,302.59	$335.25
Subtotal Headphones			**$76,186,587.97**	**$333.64**
	Universal Remote Controls	2014	$1,967,234.64	$278.25
		2015	$2,998,970.16	$275.67
		2016	$4,546,902.86	$277.62
		2017	$6,234,565.76	$278.11
		2018	$13,404,018.40	$277.34
		2019	$20,247,223.83	$277.42
Subtotal Universal Remote Controls			**$49,398,915.65**	**$277.43**

Now the subtotal rows provide reaggregated values. They provide a sum total value for the Revenue field, just like with a subtotal, and a recalculated value for the Revenue Per Item field.

Note that the Recalculate totals option does not reapply prefix operators. Fields with prefix operators are summed just as they would be when applying a regular subtotal. Only COMPUTE fields, which are calculated fields evaluated after data aggregation, are recalculated.

You can create subtotals and recomputes with more advanced options, such as different aggregations and cascading to all higher level sort fields, by right-clicking a field in the Rows bucket, pointing to **Insert breaks**, and clicking **More options**. The Configure Subtotals dialog opens, as shown in the following image.



Select the **Aggregate columns** radio button to create subtotals, or the **Recalculate totals** radio button to create recomputes. You can then choose to create subtotals or recomputes at the current levels, that is, the selected field, or for current and higher level sort fields. If you select **Current and higher level groups**, then the same subtotal settings are applied to all higher level fields in the report. Pre-existing subtotals or recomputes are not replaced. Note that the specified subtotal label text is not used for the higher level sort fields.

A grid in the Configure Subtotals dialog shows a list of measures fields in the report. Select any or all checkboxes to indicate which fields should be subtotaled or recomputed. You can also change the prefix aggregation for each one. For example, instead of a summed total, you can show a total average or total count for a selected measure column.

You can also change the text that appears in the subtotal rows of the report, and choose whether break groups with only one row should also be subtotaled. The subtotals for these groups would be the same as the measure values displayed in the group itself, so you may prefer not to subtotal them. For example, the following image shows a report with subtotals on the Store Business Region field. Since the Oceania business region occupies only one row, and the **Only show subtotals when the group has more than one row** option is selected, it is not subtotaled.

Store Business Region	Store Business Sub Region	Quantity Sold	Revenue	Gross Profit
EMEA	Africa	195	$61,881.01	$17,054.01
	Asia	87,192	$26,475,042.07	$7,450,955.07
	Europe	1,317,153	$396,208,754.84	$112,230,885.84
Subtotal: EMEA		**1,404,540**	**$422,745,677.92**	**$119,698,894.92**
North America	Canada	171,492	$51,147,788.36	$14,541,675.36
	East	129,277	$39,052,672.79	$11,063,697.79
	Mexico	42,921	$12,976,898.90	$3,680,274.90
	Midwest	201,153	$60,946,396.65	$17,171,198.65
	Northeast	5,189	$1,526,577.09	$428,166.09
	South	255,640	$77,468,535.43	$21,824,155.43
	Southeast	14,704	$4,488,702.58	$1,268,099.58
	West	1,189,804	$362,309,281.86	$101,987,950.86
Subtotal: North America		**2,010,180**	**$609,916,853.66**	**$171,965,218.66**
Oceania	Australia-New Zealand	4,242	$1,260,307.29	$361,558.29
South America	SA-Port	86,606	$25,974,011.78	$7,359,004.78
	SA-Span	4,323	$1,296,074.55	$368,719.55
Subtotal: South America		**90,929**	**$27,270,086.33**	**$7,727,724.33**

Click **Apply** to create the subtotals or recomputes as you configured them.

If you create subtotals and apply them to all higher fields, and then right-click a higher level sort field and point to **Insert breaks**, only the **More options** option is available for subtotals. If you click **More options**, the Configure Subtotals dialog opens with options to edit the cascaded group of subtotals from the lower level sort field. If you change the Apply Subtotals At option from **Current and higher level groups** to **Current level**, then the cascaded group of subtotals are removed except for the field that you right-clicked.

You can also add page breaks to a report using two different options. Right-click a field in the Rows bucket, point to **Insert breaks**, and click **Continuous numbering** or **Restart at 1** to split the report into separate pages for each value in the selected field.

Page headers and footers appear at each page break. Page headers and footers can use dynamic text to indicate the values on the page. Dynamic text is added by typing a less-than sign (<) markup tag followed by the name of the field, with no spaces between them.

For example, the following image shows a report with page breaks added for the Product Category field, and page headers added by typing **Sales for <PRODUCT_CATEGORY** in the page header area of the report.

Sales for Accessories

Product Category	Product Subcategory	Sale Year	Revenue
Accessories	Charger	2014	$158,015.56
		2015	$248,167.29
		2016	$374,562.24
Subtotal Charger			**$780,745.09**
	Headphones	2014	$2,914,047.37
		2015	$4,612,931.48
		2016	$6,899,210.86
Subtotal Headphones			**$14,426,189.71**
	Universal Remote Controls	2014	$1,967,234.64
		2015	$2,998,970.16
		2016	$4,546,902.86
Subtotal Universal Remote Controls			**$9,513,107.66**

Sales for Camcorder

Product Category	Product Subcategory	Sale Year	Revenue
Camcorder	Handheld	2014	$1,632,425.21
		2015	$2,599,025.44
		2016	$3,837,933.41
Subtotal Handheld			**$8,069,384.06**
	Professional	2014	$1,590,967.15
		2015	$2,732,875.05
		2016	$4,036,890.50
Subtotal Professional			**$8,360,732.70**
	Standard	2014	$2,655,039.17
		2015	$4,341,347.67
		2016	$6,096,884.20
Subtotal Standard			**$13,093,271.04**

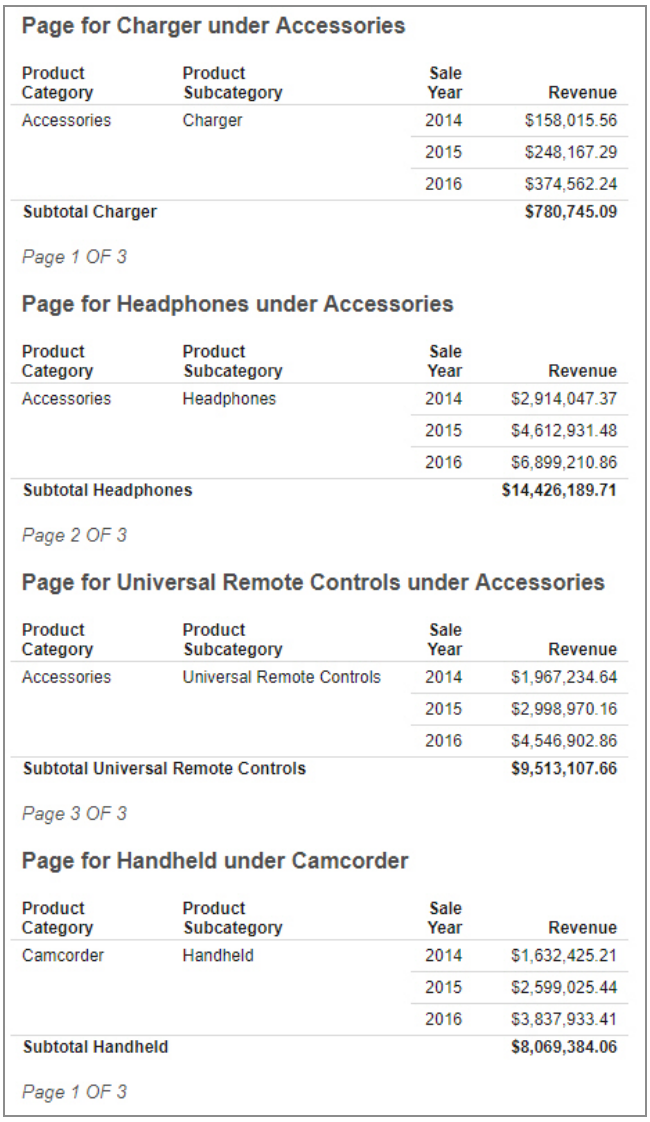
There is no difference between the Continuous numbering and Restart at 1 page break options unless there are page numbers added to the report. If there are page numbers, then using the Continuous numbering option counts page breaks for all values in the field toward page numbering, while the Restart at 1 option resets the page count for each value in the selected field. You can display page numbers by adding the dynamic text <TABPAGENO to a page header or footer.

The Restart at 1 option can be used on a higher level sort field to control the displayed page number for lower-level sort field page breaks using the Continuous paging option. For example, the report shown in the image below uses the Restart at 1 page break option on Product Category, the primary sort field, and the Continuous numbering option on Product Subcategory, the secondary sort field. It also contains the following page footer text:

```
Page <TABPAGENO of <BYLASTPAGE
```

At run time, <TABPAGENO provides the current page, and <BYLASTPAGE provides the page count for the sort field using the Restart at 1 option. Using <TABLASTPAGE instead of <BYLASTPAGE would instead provide the total page count.

The following image shows that the page for each Product Subcategory is numbered, while different values for Product Category cause the page numbers to reset.



Page for Charger under Accessories

Product Category	Product Subcategory	Sale Year	Revenue
Accessories	Charger	2014	$158,015.56
		2015	$248,167.29
		2016	$374,562.24
Subtotal Charger			**$780,745.09**

Page 1 OF 3

Page for Headphones under Accessories

Product Category	Product Subcategory	Sale Year	Revenue
Accessories	Headphones	2014	$2,914,047.37
		2015	$4,612,931.48
		2016	$6,899,210.86
Subtotal Headphones			**$14,426,189.71**

Page 2 OF 3

Page for Universal Remote Controls under Accessories

Product Category	Product Subcategory	Sale Year	Revenue
Accessories	Universal Remote Controls	2014	$1,967,234.64
		2015	$2,998,970.16
		2016	$4,546,902.86
Subtotal Universal Remote Controls			**$9,513,107.66**

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Page for Handheld under Camcorder

Product Category	Product Subcategory	Sale Year	Revenue
Camcorder	Handheld	2014	$1,632,425.21
		2015	$2,599,025.44
		2016	$3,837,933.41
Subtotal Handheld			**$8,069,384.06**

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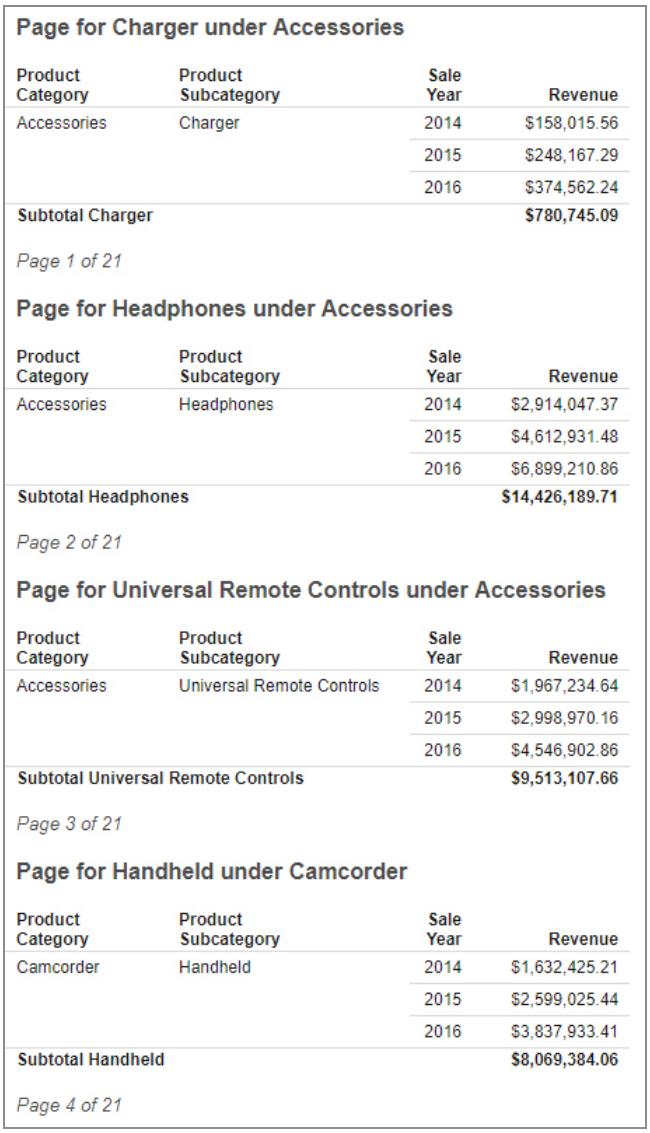
By contrast, if Product Category used either the Continuous numbering option or no page breaks at all (since breaks have already been added on a lower level sort field, Product Category values display on separate pages anyway), <BYLASTPAGE would display the total number of all pages in the report, as shown in the following image, and <TABPAGENO would not reset.



Page for Charger under Accessories

Product Category	Product Subcategory	Sale Year	Revenue
Accessories	Charger	2014	$158,015.56
		2015	$248,167.29
		2016	$374,562.24
Subtotal Charger			**$780,745.09**

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Page for Headphones under Accessories

Product Category	Product Subcategory	Sale Year	Revenue
Accessories	Headphones	2014	$2,914,047.37
		2015	$4,612,931.48
		2016	$6,899,210.86
Subtotal Headphones			**$14,426,189.71**

Page 2 of 21

Page for Universal Remote Controls under Accessories

Product Category	Product Subcategory	Sale Year	Revenue
Accessories	Universal Remote Controls	2014	$1,967,234.64
		2015	$2,998,970.16
		2016	$4,546,902.86
Subtotal Universal Remote Controls			**$9,513,107.66**

Page 3 of 21

Page for Handheld under Camcorder

Product Category	Product Subcategory	Sale Year	Revenue
Camcorder	Handheld	2014	$1,632,425.21
		2015	$2,599,025.44
		2016	$3,837,933.41
Subtotal Handheld			**$8,069,384.06**

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To visually break up a report without adding page breaks, you can add a row break in the form of a blank row or line. To add a row break, right-click a field in the Rows bucket, point to **Insert breaks**, and click **Blank row** or **Solid line**.

Row breaks do not create page breaks, so page headers and footers are not repeated on the field to which the row break is added, and they are not counted for page numbering. This technique can be a good way to space out the values and information in a report without adding unnecessary functionality. In the following image, blank row breaks on Product Subcategory make it easier to locate and isolate the values for each product subcategory.

Product Category	Product Subcategory	Sale Year	Revenue
Accessories	Charger	2014	$158,015.56
		2015	$248,167.29
		2016	$374,562.24
	Headphones	2014	$2,914,047.37
		2015	$4,612,931.48
		2016	$6,899,210.86
	Universal Remote Controls	2014	$1,967,234.64
		2015	$2,998,970.16
		2016	$4,546,902.86
Camcorder	Handheld	2014	$1,632,425.21
		2015	$2,599,025.44
		2016	$3,837,933.41
	Professional	2014	$1,590,967.15
		2015	$2,732,875.05
		2016	$4,036,890.50
	Standard	2014	$2,655,039.17
		2015	$4,341,347.67
		2016	$6,096,884.20

Using Subtotals on Sort Columns in a Report

Page and row breaks are not available for fields in the Column Groups bucket, but you can use the subtotal and recompute options on columnar sort fields similarly to row sort fields. To add columnar subtotal columns, right-click a field in the Column Groups bucket, point to **Insert breaks**, and click **Aggregate rows**. To add columnar recompute columns, right-click a field in the Column Groups bucket, point to **Insert breaks**, and click **Recalculate totals**.

Columnar subtotals work differently than row subtotals. While a subtotal or recompute row is added for each value in the selected Row field, subtotal or recompute columns are

added after the last value of the selected field in each column group. For example, in the following image, subtotals have been added to the Sale Quarter field, so the subtotal column sums the revenue values for all of the quarters within each value for Sale Year, which is a higher level columnar sort field. Effectively, the subtotals applied to the Sale Quarter field provide a total for each Sale Year value.

Product Category	Sale,Year Sale,Quarter Product Subcategory	2014 1	2	3	4	Subtotal	2015 1	2	3	4	Subtotal
Accessories	Charger	$36,116.85	$38,033.98	$35,870.62	$47,994.11	$158,015.56	$59,063.73	$53,124.15	$63,139.11	$72,840.30	$248,167.29
	Headphones	$633,086.83	$676,405.46	$799,339.75	$805,215.33	$2,914,047.37	$1,026,814.32	$1,071,607.34	$1,155,022.10	$1,359,487.72	$4,612,931.48
	Universal Remote Controls	$455,919.34	$450,666.60	$435,662.08	$624,986.62	$1,967,234.64	$714,190.36	$702,622.67	$745,960.31	$836,196.82	$2,998,970.16
Camcorder	Handheld	$353,123.43	$361,084.52	$385,634.68	$532,582.58	$1,632,425.21	$581,396.28	$578,553.05	$666,019.48	$773,056.63	$2,599,025.44
	Professional	$275,502.00	$331,737.30	$485,447.00	$498,280.85	$1,590,967.15	$737,995.55	$459,323.45	$794,441.20	$741,114.85	$2,732,875.05
	Standard	$596,574.29	$551,587.10	$665,892.51	$840,985.27	$2,655,039.17	$984,627.82	$1,035,312.74	$1,068,733.84	$1,252,673.27	$4,341,347.67
Computers	Smartphone	$302,839.60	$285,463.66	$349,989.27	$503,542.66	$1,441,835.19	$545,285.69	$555,012.38	$646,064.08	$733,129.43	$2,479,491.58
	Tablet	.	.	.	.	.	.	.	.	.	.
Media Player	Blu Ray	$2,099,584.37	$1,939,154.11	$2,111,309.30	$2,926,219.37	$9,076,267.15	$3,396,269.33	$3,256,868.72	$3,666,756.74	$4,151,645.00	$14,471,539.79
	DVD Players	$1,144,514.72	$1,115,006.84	$1,241,271.01	$1,714,534.87	$5,215,327.44	$400,572.37	.	.	.	$400,572.37
	DVD Players - Portable	$183,097.99	$194,056.33	$193,622.54	$949.91	$571,726.77	.	.	.	.	.
	Streaming	.	$20,177.41	$39,410.87	$57,668.71	$117,256.99	$54,760.94	$57,056.62	$60,776.14	$87,825.35	$260,419.05

As a result, subtotals and recomputes added to the highest level field in the Column Groups bucket serve as a grand total for all of the columns in the report.

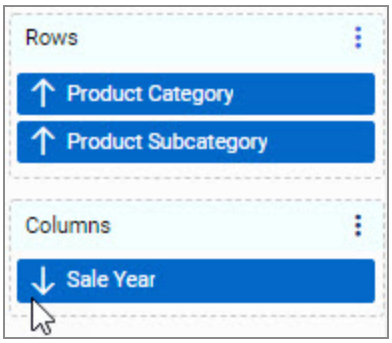
Sorting Data in a Report

You can modify the order and arrangement of values in a report by using different sort orders. Reports are sorted into rows based on the values of fields in the Rows bucket, and into columns based on the values of fields in the Column Groups bucket.

Sorting is hierarchical, so values are first sorted by the first field in the Row or Column bucket, then by the second field, and so on. For example, in the following image, the report is sorted by the Product Category field, then for product subcategories under each product category, then by sale year values for each product subcategory. Product Category, Product Subcategory, and Sale Year have all been placed into the Rows bucket. Gross Profit was placed in the Summaries bucket, so it is not used to sort the report. Instead, gross profit values are sorted by the other three fields.

Product Category	Product Subcategory	Sale Year	Gross Profit
Computers	Smartphone	2014	$560,961.19
		2015	$968,864.58
		2016	$1,451,039.85
		2017	$1,980,595.07
		2018	$5,153,998.61
		2019	$5,719,242.85
	Tablet	2016	$196,009.74
		2017	$1,395,785.48
		2018	$3,123,898.72
		2019	$12,958,422.03
Media Player	Blu Ray	2014	$2,018,067.15
		2015	$3,237,933.79
		2016	$4,701,470.35
		2017	$6,554,474.17
		2018	$14,110,114.35
		2019	$21,149,135.32
	DVD Players	2014	$1,717,087.44
		2015	$142,558.37
	DVD Players - Portable	2014	$265,150.77
	Streaming	2014	$46,646.99
		2015	$107,489.05
		2016	$147,308.03
		2017	$176,395.88
		2018	$370,256.62
		2019	$1,088,490.08

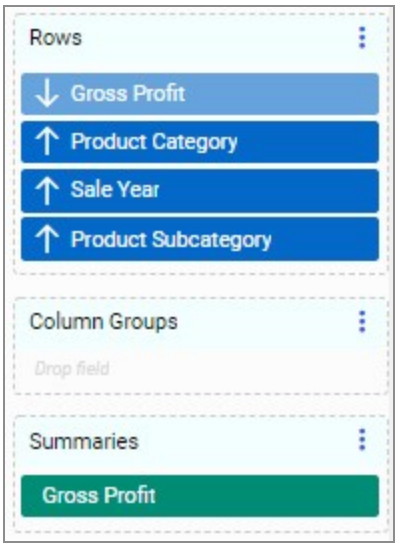
By default, field values are sorted into ascending order based on the numeric and alphabetical order defined in the code page that you are using. To reverse the sort order, right-click a field and click **Sort descending**. To return to the original sort order, right-click a field and click **Sort ascending**. You can also click the sort arrows on the fields in a bucket, as shown in the following image.



You can rearrange the fields within a bucket by dragging them, which allows you to prioritize certain information in the report. The previous example showed a report sorted by Product Category, then Product Subcategory, then Sale Year. If we move Sale Year to the top of the Rows bucket so that it is the primary sort field, the report becomes a breakdown of yearly sales, as shown in the following image.

Sale Year	Product Category	Product Subcategory	Gross Profit
2014	Accessories	Charger	$77,918.56
		Headphones	$943,893.37
		Universal Remote Controls	$536,815.64
	Camcorder	Handheld	$832,239.21
		Professional	$326,739.15
		Standard	$749,341.17
	Computers	Smartphone	$560,961.19
	Media Player	Blu Ray	$2,018,067.15
		DVD Players	$1,717,087.44
		DVD Players - Portable	$265,150.77
		Streaming	$46,646.99
	Stereo Systems	Boom Box	$546,423.99
		Home Theater Systems	$1,116,533.39
		Receivers	$673,700.84
		Speaker Kits	$1,010,824.45
		iPod Docking Station	$615,492.06
	Televisions	CRT TV	$602,419.65
		Flat Panel TV	$645,916.40
		Portable TV	$341,221.62
	Video Production	Video Editing	$706,553.17

You can sort by measure fields as well when they use the Summaries, Details, or Details with counter display options. To sort by aggregated measure values, right-click a field in the measure bucket and click **Sort ascending** or **Sort descending**. A hidden instance of the measure field is added to the top of the Rows bucket, as shown in the following image.



The result is a report that is sorted into rows based on the selected measure value, as shown in the following image.

Sale Year	Product Category	Product Subcategory	Gross Profit
2019	Media Player	Blu Ray	$21,149,135.32
2018	Media Player	Blu Ray	$14,110,114.35
2019	Computers	Tablet	$12,958,422.03
2019	Stereo Systems	Home Theater Systems	$11,437,009.44
2019	Stereo Systems	Speaker Kits	$10,556,588.15
2019	Accessories	Headphones	$10,077,097.59
2019	Camcorder	Handheld	$8,758,717.23
2019	Camcorder	Standard	$8,021,561.37
2018	Stereo Systems	Home Theater Systems	$7,662,268.78
2019	Video Production	Video Editing	$7,330,486.17
2018	Stereo Systems	Speaker Kits	$7,072,283.83
2018	Accessories	Headphones	$6,795,787.12
2019	Stereo Systems	Receivers	$6,759,172.56
2019	Televisions	Flat Panel TV	$6,560,087.29
2017	Media Player	Blu Ray	$6,554,474.17
2019	Stereo Systems	iPod Docking Station	$6,244,914.54
2018	Camcorder	Handheld	$5,839,787.45
2019	Computers	Smartphone	$5,719,242.85

In this example, sorting by the Gross Profit field from the Summaries bucket has allowed us to see at a glance that larger profits have been made in more recent years. You could change the sort order to see lowest profits first by clicking the sort arrow for the hidden Gross Profit field in the Rows bucket, just as you could for a visible field.

You can move this hidden field in relation to the other sort fields to change the sorting priority. In the following image, the hidden Gross Profit field has been moved to after Sale Year, allowing us to see the most profitable products in each year.

Sale Year	Product Category	Product Subcategory	Gross Profit
2014	Media Player	Blu Ray	$2,018,067.15
	Media Player	DVD Players	$1,717,087.44
	Stereo Systems	Home Theater Systems	$1,116,533.39
	Stereo Systems	Speaker Kits	$1,010,824.45
	Accessories	Headphones	$943,893.37
	Camcorder	Handheld	$832,239.21
	Camcorder	Standard	$749,341.17
	Video Production	Video Editing	$706,553.17
	Stereo Systems	Receivers	$673,700.84
	Televisions	Flat Panel TV	$645,916.40
	Stereo Systems	iPod Docking Station	$615,492.06
	Televisions	CRT TV	$602,419.65
	Computers	Smartphone	$560,961.19
	Stereo Systems	Boom Box	$546,423.99
	Accessories	Universal Remote Controls	$536,815.64
	Televisions	Portable TV	$341,221.62
	Camcorder	Professional	$326,739.15
	Media Player	DVD Players - Portable	$265,150.77
	Accessories	Charger	$77,918.56
	Media Player	Streaming	$46,646.99
2015	Media Player	Blu Ray	$3,237,933.79
	Stereo Systems	Home Theater Systems	$1,706,265.20
	Stereo Systems	Speaker Kits	$1,580,534.80
	Accessories	Headphones	$1,482,596.48
	Camcorder	Handheld	$1,325,634.44
	Camcorder	Standard	$1,235,711.67

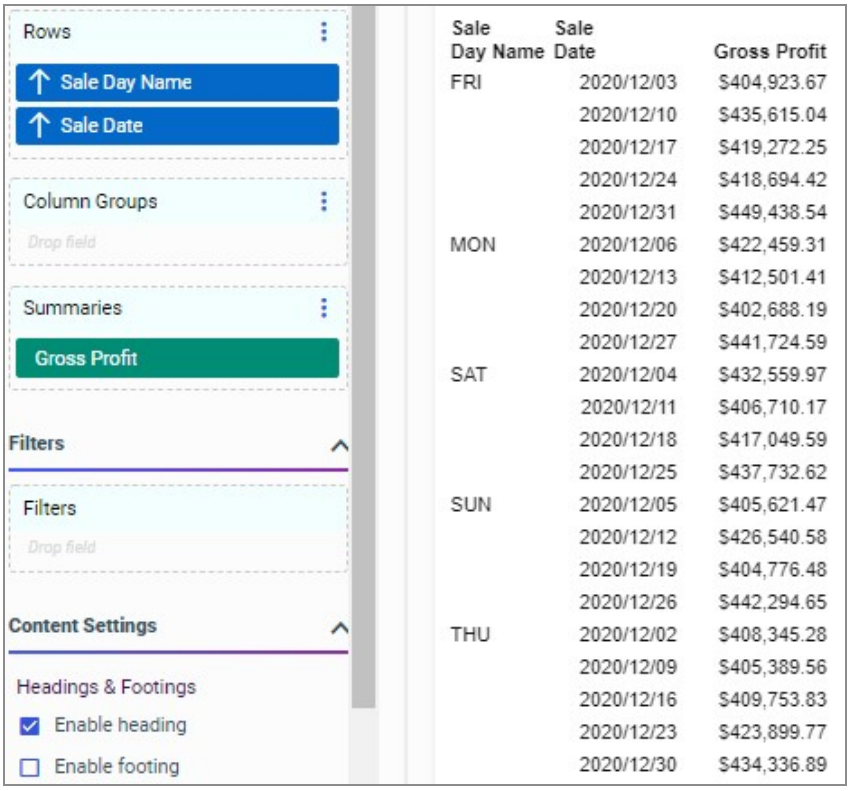
You can sort by multiple measures to have more granular control over how the report is sorted. If there are some matching values of the first sorting measure, the second sorting measure sorts those matching values.

When using the Details or Details with counter display option instead of the Summaries option, you can sort fields in the Details bucket in the same way. This can be helpful if you want to view a sorted list of all records for a field. Right-click a field in the Details or Details with counter bucket and click **Sort ascending** or **Sort descending** to sort the report using the values from that field.

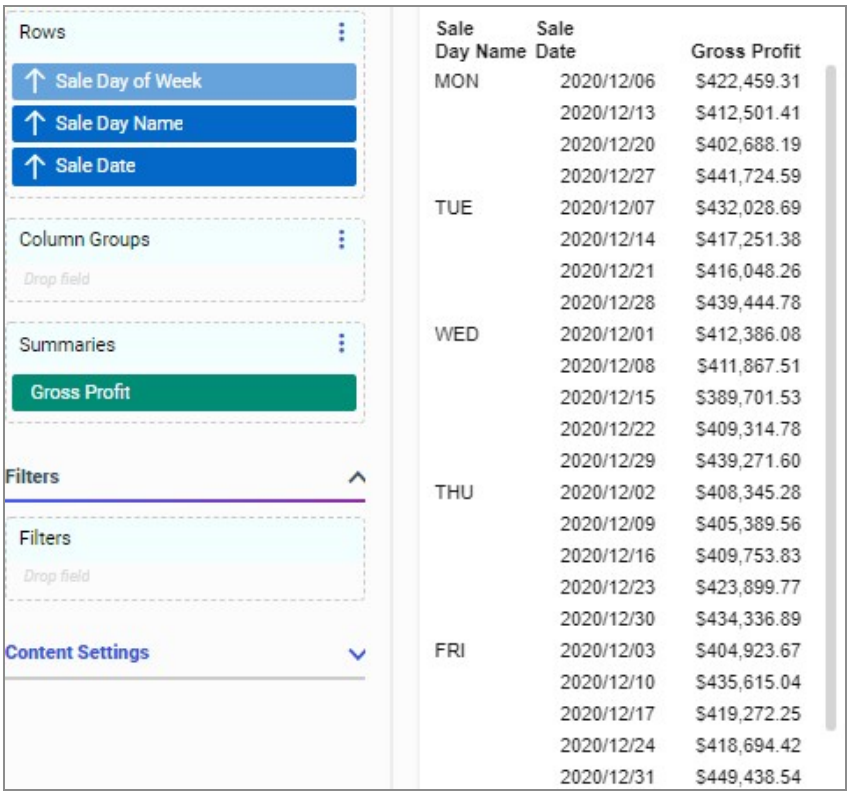
You can remove the sorting effect of a field in the Summaries, Details, or Details with counter bucket by pointing to the invisible measure field in the Rows bucket and clicking the X, or by right-clicking the original field in the measure bucket and clicking **No sort**. The hidden field is removed from the Rows bucket, but the original field remains in the measure bucket. When you remove the original field from the measure bucket, the invisible field in the Rows bucket is automatically removed as well.

You can also sort by hidden dimension fields, if you do not want them to display in the chart. To hide a dimension field in your report, right-click the field in the Rows or Column Groups bucket and click **Hide**.

The following image shows a report sorted by Sale Day Name and Sale Date. We want to see sales information based on the day of the week. Notice, however, that Sale Day Name is sorted alphabetically, by default.

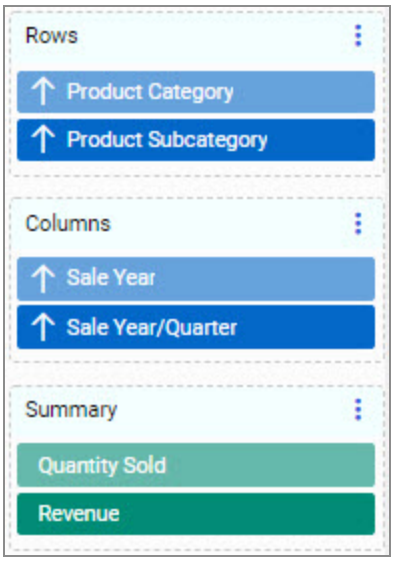


We can add the Sale Day of Week field, which assigns a number to each day, to the report as the primary sort field, and then hide it, so the days are listed in weekday order, as shown in the following image.



Using Hidden Fields in Reports

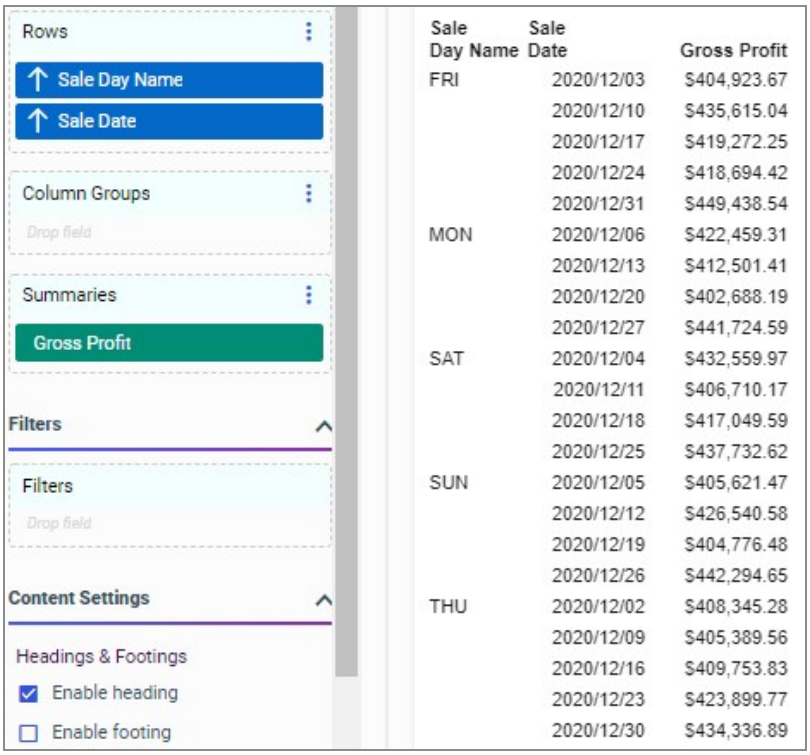
When creating a report in WebFOCUS Designer, you can hide a field so that it exists in the report but is not shown as a column. The main advantage of doing this is that hidden fields are still used for sorting, which gives you more control over how the values in a report are displayed and organized. To hide a field in your report, right-click a field and click **Hide**. The hidden field appears slightly faded in its bucket, as shown in the following image.



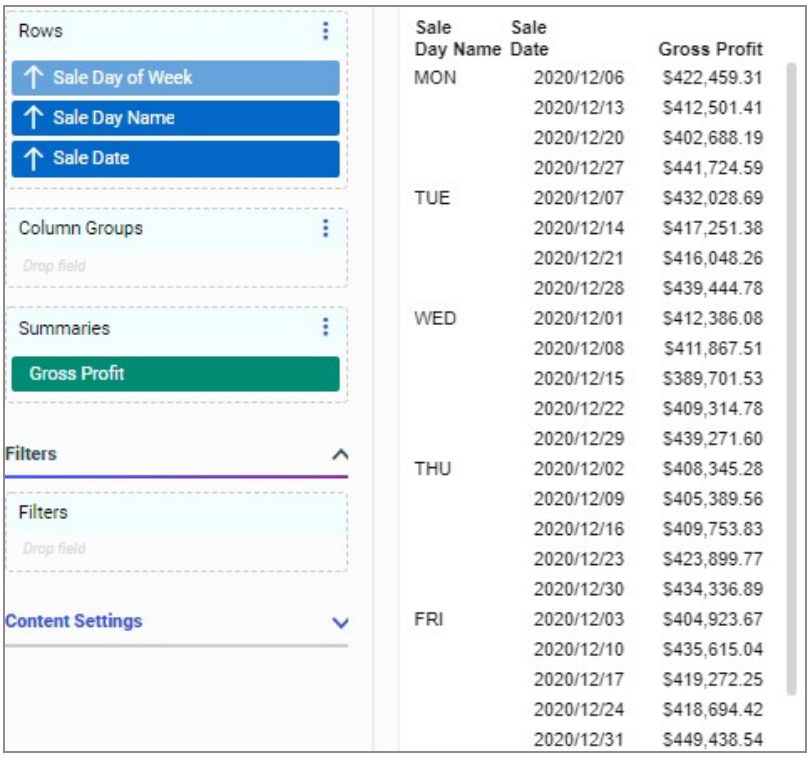
You can display the field again by right-clicking it and de-selecting the **Hide** option.

You can sort by hidden dimension fields if you do not want them to display in the chart, but still want to use the values in those fields to sort the values in the fields that do display.

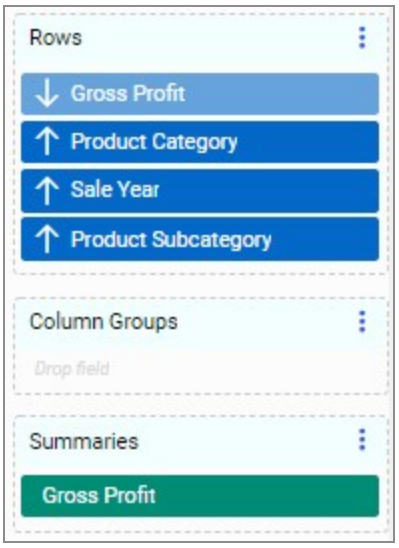
The following image shows a report sorted by Sale Day Name and Sale Date. We want to see sales information based on the day of the week. Notice, however, that Sale Day Name is sorted alphabetically, by default.



We can add the Sale Day of Week field, which assigns a number to each day, to the report as the primary sort field, and then hide it so that the days are listed in order, as shown in the following image.



A hidden field is also created automatically when you sort by a measure field. To sort by aggregated measure values, right-click a measure field in the Summaries bucket and click **Sort ascending** or **Sort descending**. A hidden instance of the measure field is added to the top of the Rows bucket, as shown in the following image.



The result is a report that is sorted into rows based on the selected measure value, as shown in the following image.

Sale Year	Product Category	Product Subcategory	Gross Profit
2019	Media Player	Blu Ray	$21,149,135.32
2018	Media Player	Blu Ray	$14,110,114.35
2019	Computers	Tablet	$12,958,422.03
2019	Stereo Systems	Home Theater Systems	$11,437,009.44
2019	Stereo Systems	Speaker Kits	$10,556,588.15
2019	Accessories	Headphones	$10,077,097.59
2019	Camcorder	Handheld	$8,758,717.23
2019	Camcorder	Standard	$8,021,561.37
2018	Stereo Systems	Home Theater Systems	$7,662,268.78
2019	Video Production	Video Editing	$7,330,486.17
2018	Stereo Systems	Speaker Kits	$7,072,283.83
2018	Accessories	Headphones	$6,795,787.12
2019	Stereo Systems	Receivers	$6,759,172.56
2019	Televisions	Flat Panel TV	$6,560,087.29
2017	Media Player	Blu Ray	$6,554,474.17
2019	Stereo Systems	iPod Docking Station	$6,244,914.54
2018	Camcorder	Handheld	$5,839,787.45
2019	Computers	Smartphone	$5,719,242.85

In this example, sorting by Gross Profit has allowed us to see at a glance that larger profits have been made in more recent years. You could change the sort order to see lowest profits first by clicking the sort arrow for the hidden Gross Profit field in the Rows bucket, just as you could for a visible field.

You can move this hidden field in relation to the other sort fields to change the sorting priority. In the following image, the hidden Gross Profit field has been moved to after Sale Year, allowing us to see the most profitable products in each year, as shown in the following image.

Sale Year	Product Category	Product Subcategory	Gross Profit
2014	Media Player	Blu Ray	$2,018,067.15
	Media Player	DVD Players	$1,717,087.44
	Stereo Systems	Home Theater Systems	$1,116,533.39
	Stereo Systems	Speaker Kits	$1,010,824.45
	Accessories	Headphones	$943,893.37
	Camcorder	Handheld	$832,239.21
	Camcorder	Standard	$749,341.17
	Video Production	Video Editing	$706,553.17
	Stereo Systems	Receivers	$673,700.84
	Televisions	Flat Panel TV	$645,916.40
	Stereo Systems	iPod Docking Station	$615,492.06
	Televisions	CRT TV	$602,419.65
	Computers	Smartphone	$560,961.19
	Stereo Systems	Boom Box	$546,423.99
	Accessories	Universal Remote Controls	$536,815.64
	Televisions	Portable TV	$341,221.62
	Camcorder	Professional	$326,739.15
	Media Player	DVD Players - Portable	$265,150.77
	Accessories	Charger	$77,918.56
	Media Player	Streaming	$46,646.99
2015	Media Player	Blu Ray	$3,237,933.79
	Stereo Systems	Home Theater Systems	$1,706,265.20
	Stereo Systems	Speaker Kits	$1,580,534.80
	Accessories	Headphones	$1,482,596.48
	Camcorder	Handheld	$1,325,634.44
	Camcorder	Standard	$1,235,711.67

You can sort by multiple measures to have more granular control over how the report is sorted. If there are some matching values of the first sorting measure, then the second sorting measure is used as a secondary means of determining sort order.

When using the Details display option instead of the Summaries option, you can sort fields in the Details bucket in the same way. This can be helpful if you want to view a sorted list of all records for a field. Right-click a field in the Details bucket and click **Sort ascending** or **Sort descending** to sort the report using the values from that field.

You can remove the sorting effect of a field in the Summaries or Details bucket by pointing to the invisible measure field in the Rows bucket and clicking the X, or by right-clicking the original field in the Summaries or Details bucket and clicking **No sort**. The hidden field is

removed from the Rows bucket, but the original field remains in the Summaries or Details bucket. When you remove the original field from the Summaries or Details bucket, the invisible field in the Rows bucket is automatically removed as well.

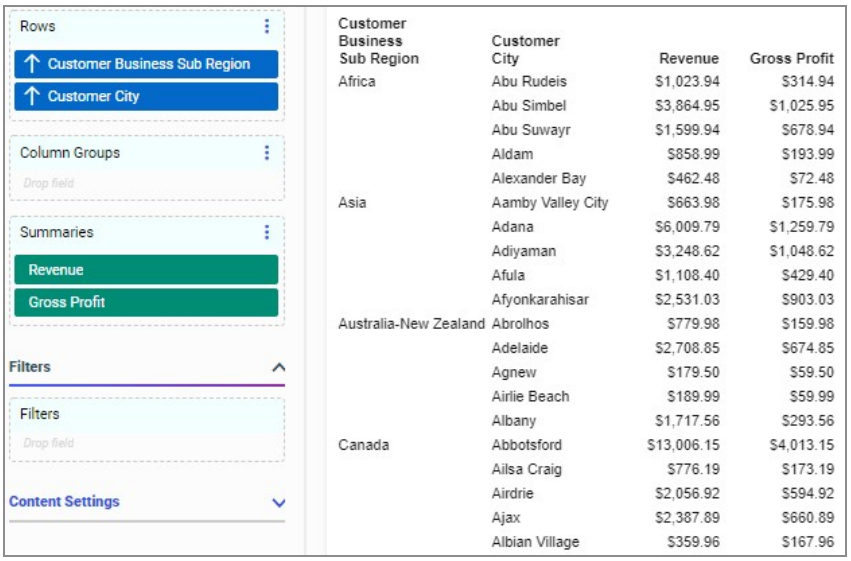
Using Sort Limits

You can use sort limits to control how many values to display in your content. While a filter allows you to limit your content by specifying which values should display, a sort limit allows you to limit it by specifying how many values should display, depending on the amount of information that you want to see.

To add a sort limit, right-click a field in a bucket, point to **Sort limit**, and select a value. Only fields in certain buckets, generally the default dimension and measure buckets, can have sort limits applied. When you add a sort limit to a measure field, that field is used to sort your content automatically.

When setting a sort limit, the values 5, 10, and 25 are provided for quick selection, but you can select **Custom** to specify a different number as the sort limit. You can remove the sort limit from a field by right-clicking the field, pointing to **Sort limit**, and clicking **No limit**.

When a sort limit is applied to a sort field, only the specified number of values are displayed for that field within each sort group. If a sort limit of 5 is applied to the primary sort field, then only the first five sort values display in the chart or report. If a sort limit of 5 is applied to a secondary sort field, then five values for that field display within each higher level sort value. In the following image, both the Customer Business Sub Region and Customer City fields have a sort limit of 5, so the report shows the first five Customer Business Sub Region values and the first five Customer City values within each subregion.

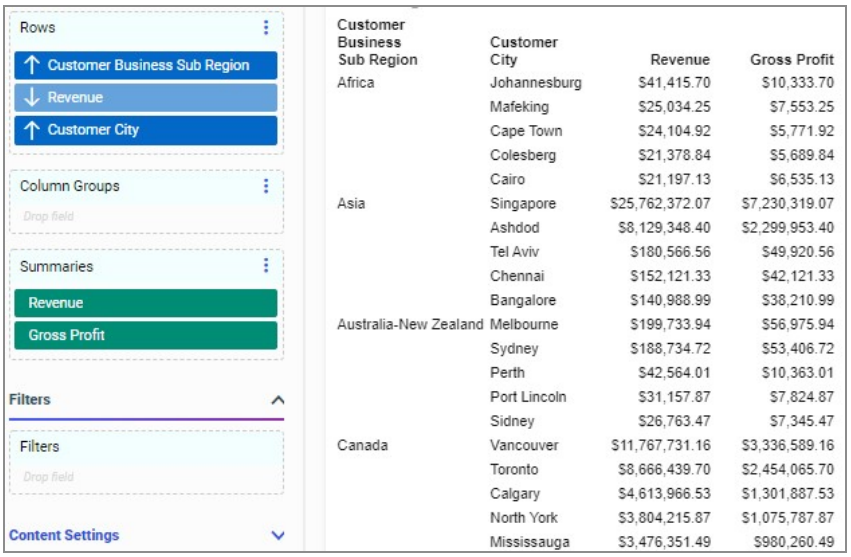


Customer Business Sub Region	Customer City	Revenue	Gross Profit
Africa	Abu Rudeis	$1,023.94	$314.94
	Abu Simbel	$3,864.95	$1,025.95
	Abu Suwayr	$1,599.94	$678.94
	Aldam	$858.99	$193.99
	Alexander Bay	$462.48	$72.48
Asia	Aamby Valley City	$663.98	$175.98
	Adana	$6,009.79	$1,259.79
	Adiyaman	$3,248.62	$1,048.62
	Afula	$1,108.40	$429.40
	Afyonkarahisar	$2,531.03	$903.03
Australia-New Zealand	Abrolhos	$779.98	$159.98
	Adelaide	$2,708.85	$674.85
	Agnew	$179.50	$59.50
	Airlie Beach	$189.99	$59.99
	Albany	$1,717.56	$293.56
Canada	Abbotsford	$13,006.15	$4,013.15
	Ailsa Craig	$776.19	$173.19
	Airdrie	$2,056.92	$594.92
	Ajax	$2,387.89	$660.89
	Albian Village	$359.96	$167.96

The values that display are based on the sort order of the field that has the sort limit applied. If an alphanumeric dimension field has a sort limit of 5 and is sorted ascending, then the first five alphabetic values for that field display. If the same field is sorted descending, then the last five alphabetic values display.

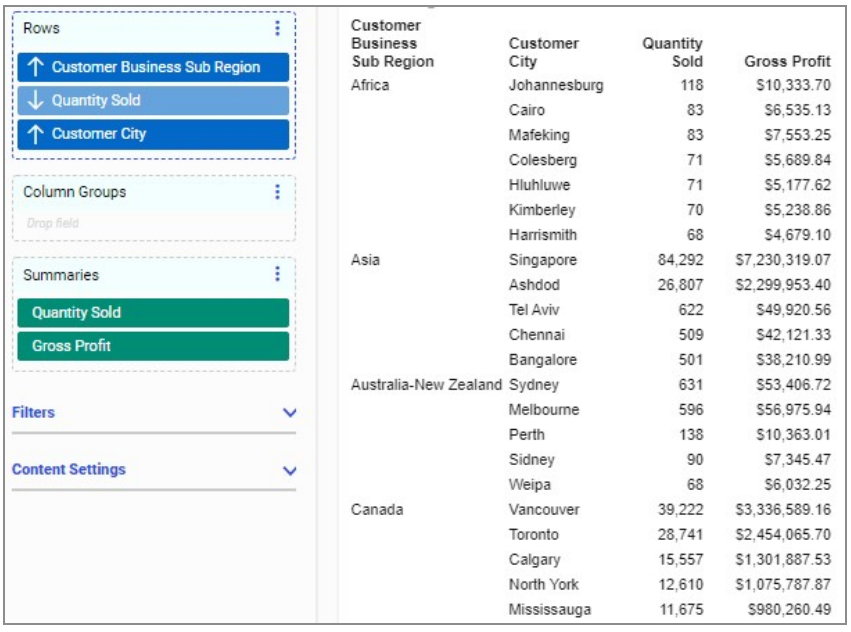
As a result, one of the most effective ways to use sort limits is to apply them to a sorting measure field, which allows you to limit the report to the highest or lowest aggregated values in each sort category. To do this, right-click a field in the measure bucket, point to **Sort limit**, and select a value. In a report, a hidden instance of the selected measure field is automatically added to the top of the Rows bucket, with the sort limit applied. You can click the arrow icon on the hidden field in the Rows bucket to change the sort order, and you can drag the hidden field into a different order in the Rows bucket to change the level at which the sort limit is applied. In a chart, you can right-click the measure field for which you created a sort limit and change the sort order from the shortcut menu.

In the following image, a sort limit of 5 has been applied to the Revenue field from the Summaries bucket of a report. The resulting Revenue sort field has been changed to descending order and moved to apply the sort limit after the Customer Business Sub Region field. As a result, the report shows the cities with the five highest Revenue values in each business subregion.



Customer Business Sub Region	Customer City	Revenue	Gross Profit
Africa	Johannesburg	$41,415.70	$10,333.70
	Mafeking	$25,034.25	$7,553.25
	Cape Town	$24,104.92	$5,771.92
	Colesberg	$21,378.84	$5,689.84
	Cairo	$21,197.13	$6,535.13
Asia	Singapore	$25,762,372.07	$7,230,319.07
	Ashdod	$8,129,348.40	$2,299,953.40
	Tel Aviv	$180,566.56	$49,920.56
	Chennai	$152,121.33	$42,121.33
	Bangalore	$140,988.99	$38,210.99
Australia-New Zealand	Melbourne	$199,733.94	$56,975.94
	Sydney	$188,734.72	$53,406.72
	Perth	$42,564.01	$10,363.01
	Port Lincoln	$31,157.87	$7,824.87
	Sidney	$26,763.47	$7,345.47
Canada	Vancouver	$11,767,731.16	$3,336,589.16
	Toronto	$8,666,439.70	$2,454,065.70
	Calgary	$4,613,966.53	$1,301,887.53
	North York	$3,804,215.87	$1,075,787.87
	Mississauga	$3,476,351.49	$980,260.49

If you are sorting by a measure field with a sort limit, and multiple rows within a sort group have the same value for that measure field, then they are all displayed. This may result in a number of rows higher than the sort limit. For example, the following image shows a report in which the Quantity Sold field has a sort limit of 5. Since multiple Customer City values in the Africa subregion have the same Quantity Sold value, seven values display, representing the cities with the five highest distinct Quantity Sold values in that subregion.

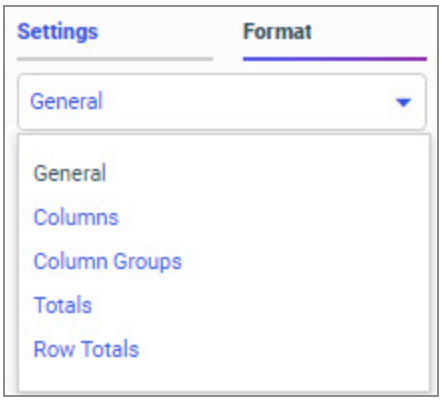


Customer Business Sub Region	Customer City	Quantity Sold	Gross Profit
Africa	Johannesburg	118	$10,333.70
	Cairo	83	$6,535.13
	Mafeking	83	$7,553.25
	Colesberg	71	$5,689.84
	Hluhluwe	71	$5,177.62
	Kimberley	70	$5,238.86
	Harrismith	68	$4,679.10
Asia	Singapore	84,292	$7,230,319.07
	Ashdod	26,807	$2,299,953.40
	Tel Aviv	622	$49,920.56
	Chennai	509	$42,121.33
	Bangalore	501	$38,210.99
Australia-New Zealand	Sydney	631	$53,406.72
	Melbourne	596	$56,975.94
	Perth	138	$10,363.01
	Sidney	90	$7,345.47
	Weipa	68	$6,032.25
Canada	Vancouver	39,222	$3,336,589.16
	Toronto	28,741	$2,454,065.70
	Calgary	15,557	$1,301,887.53
	North York	12,610	$1,075,787.87
	Mississauga	11,675	$980,260.49

Styling Reports in ibi WebFOCUS Designer

You can apply styling changes to a report to help it visually match the styling of your other content, and make it easier to read and more visually appealing. You can style a report from the Format tab on the Properties panel.

On the Format tab, you can use the quick access menu to select the section or component of the report whose styling properties you want to change, as shown in the following image.



You can style the following sections or components of a report:

- **General**: Set properties, such as a theme, font, or background color that affect the entire report.
- **Columns**: Format the text and cells for column titles and data values.
- **Column Groups**: Format the text and cells for the column group, also known as across column, field titles, and data values. You can create column groups by adding dimensions to the Column Groups bucket in a report.
- **Totals**: Set text and cell properties for column totals and subtotals.
- **Row Totals**: Set text and cell properties for row totals.

If you are styling Columns, Column Groups, or Row Totals in a report, you can select a specific field whose title or values you want to style. You can revert the changes you made in any area by clicking **Reset styling** on the Format tab. Only the settings in the selected area are reset.

Setting General and Columnar Report Properties

When you select **General** from the quick access menu on the Format tab, you are presented with options to style and format the entire report. These options include the ability to set a theme, change the output format, change the font style and size, set cell margins, and configure how column widths are set. Font and cell styling options can be set for the entire report, or for specific columns within it.

Applying Themes to Reports

On the Format tab, in the General settings, in the General Options section, you can select a theme (.sty file, or StyleSheet), to apply to your report from the Theme menu. Themes style multiple components of a report, such as headers, column titles, and data text, all at once. Themes include associated cascading style sheet files along with a StyleSheet to help coordinate styling between an individual report and the entire visualization.

When creating a stand-alone report, the default theme is Designer 2018. When you change a visualization into a page by adding a second new content item, the theme used for the report is applied to the page. When you add items to the page, either by creating them or adding them as external content, the page theme is used as the default for all content items. You can then change the theme for each individual item.

If you prefer, you can specify one of the themes included with WebFOCUS, such as the Designer 2018, Light, Midnight, or Vivid theme, select a custom theme saved to the Global Resources area in the repository, or you can click **Custom** to select a legacy template or a StyleSheet saved to a workspace in your repository. When you select a StyleSheet using the Custom option, it is applied to the report and added to the Theme list.

To make a custom theme available directly from the Theme menu, create a folder for it in the Global Resources area, in the Custom folder within the Themes folder. In the new folder that you create inside the Custom folder, you can add a custom StyleSheet to use with charts and reports, and a custom CSS file to use for pages. The .sty file and .css file must both be named **theme**. An .sty file and .css file that share theme folder are associated. If you select a theme for a report, which uses the .sty file, then when you convert it to a page, the associated .css file is used as the page theme by default.

Tip: When creating a custom theme, you can copy the CSS and StyleSheet syntax from existing themes to use as a model.

Note: Charts and reports created for use on pages can use a transparent background to allow the defined background color of the page containers to show through. Since the themes used for charts and reports (.sty files) can be associated with themes for pages (.css files), you can coordinate the background, text, and element colors used in both themes to create content with unified styling. At design time, the page theme associated with the chart or report theme is used for the canvas background. This is for visibility purposes only, and shows how the chart or report appears when added to a page with the associated theme. The stand-alone chart or report does not include this background.

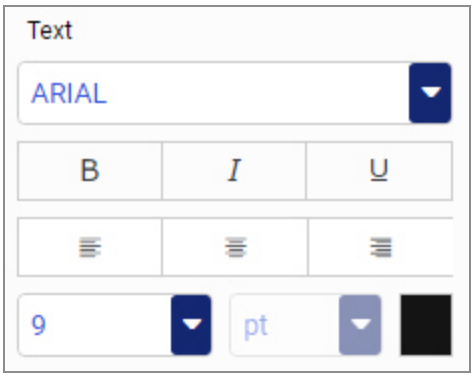
If a chart or report is run stand-alone instead of being added to a page, the run-time view displays a white background only. This means that if, to display on a dark-colored page, the font color in the selected theme is defined as white and uses a transparent chart background, then the text is not visible on the white preview background. An example of such a theme is the Midnight theme, provided as one of the default themes in the Global Resources folder. To view the white text, build your chart or report on the canvas, or add it to a page container with a dark background.

Formatting Text in a Report

You can use text formatting options to change the font, font style, alignment, size, and color of the text in your report. On the **Format** tab, in the **General** options, you can set these options for the entire report.

To set the same properties but only apply them to a specific area of your report, select a different option from the quick access menu. For example, select **Columns** to change the font in the body of the report. In the Select Elements and Columns area, you can specify whether your formatting should apply to the column titles, data values, or both, and which column should be affected. This allows you to set styling options that affect specific columns of the report, highlighting or distinguishing certain fields.

The text formatting options are shown in the following image.



A list of default fonts is provided. To add a font to this list, specify the font files for each font style, such as regular, bold, and italic, in the fontuser.xml file, in your server installation. This file is located in the and so on, subdirectory of the server configuration directory, for example, *drive*:\ibi\srv82\wfs\etc. For more information, see the *WebFOCUS Font Support* topic in *Creating Reports With ibi™ WebFOCUS® Language*. If you are configuring a TrueType font, you do not need to specify the AFM font metrics file.

Formatting Cells in a Report

You can style the body of your report by specifying cell background colors, and setting cell margins. These options can help to make your report more legible by separating and spacing out the text, and by delineating different rows of data. On the **Format** tab, select **General** from the quick access menu to apply this formatting to the entire report. Select **Columns** and then make selections from the Selected Elements and Column menus to apply cell formatting to the data values, column headers, or both areas of the selected column or columns.

You can change the background color that appears behind the entire report, only the column titles, or only the data values in one or more columns of a report. Click the color swatch next to Report, Title Row, or Data Row to change the background color for the associated area. If you change the color for a Report, the background color of the entire report, including the column title area and data values, is changed. Alternatively, you can set the background color for just the column titles using just the Title Row color option, or for just the data values using the Data Row color option. If you select **Columns** from the quick access menu and then select a specific column from the Select Elements and Columns menus, the background color is only applied to a single column.

When setting the background color for the data values in the report, you can apply different colored bands to made it easier to differentiate different rows or sort groups. You can set alternating bands in a repeating pattern of up to 4 rows. To add bands, click the

plus icon to the right of the Data Row option, then set a second color. To add another color to the band pattern, click the plus sign again. To remove a band color, click the minus sign. The following image shows a report with 4 Data Row colors set in a pattern of yellow, white, blue, and white.

Sale Year	Sale Quarter	Product Category	Quantity Sold	Revenue	Gross Profit
2015	1	Accessories	4,580	$1,125,123.02	$347,865.02
		Camcorder	3,873	$1,225,199.72	$406,657.72
		Computers	1,343	$302,839.60	$117,086.60
		Media Player	11,717	$3,427,197.08	$925,302.08
		Stereo Systems	15,000	$3,320,151.66	$1,072,105.66
		Televisions	3,925	$1,566,904.80	$385,015.80
		Video Production	1,720	$477,391.46	$154,764.46
	2	Accessories	4,662	$1,165,106.04	$362,612.04
		Camcorder	3,812	$1,244,408.92	$409,405.92
		Computers	1,235	$285,463.66	$110,264.66
		Media Player	11,618	$3,268,394.69	$894,116.69
		Stereo Systems	13,259	$3,026,456.46	$948,934.46
		Televisions	3,748	$1,577,021.42	$387,599.42
		Video Production	1,731	$480,282.56	$149,265.56

By default, each band spans a single row of the report. As an alternative, you can set each band to span a sort group, visually distinguishing values for different sort fields. To change the scope of each band, open the Alternate On menu and select a sort field in your report. The following image shows a report with 4 Data Row colors set in a pattern of yellow, white, blue, and white, alternating on each value of the Sale Quarter field.

Sale Year	Sale Quarter	Product Category	Quantity Sold	Revenue	Gross Profit
2015	1	Accessories	4,580	$1,125,123.02	$347,865.02
		Camcorder	3,873	$1,225,199.72	$406,657.72
		Computers	1,343	$302,839.60	$117,086.60
		Media Player	11,717	$3,427,197.08	$925,302.08
		Stereo Systems	15,000	$3,320,151.66	$1,072,105.66
		Televisions	3,925	$1,566,904.80	$385,015.80
		Video Production	1,720	$477,391.46	$154,764.46
	2	Accessories	4,662	$1,165,106.04	$362,612.04
		Camcorder	3,812	$1,244,408.92	$409,405.92
		Computers	1,235	$285,463.66	$110,264.66
		Media Player	11,618	$3,268,394.69	$894,116.69
		Stereo Systems	13,259	$3,026,456.46	$948,934.46
		Televisions	3,748	$1,577,021.42	$387,599.42
		Video Production	1,731	$480,282.56	$149,265.56
	3	Accessories	4,783	$1,270,872.45	$390,073.45
		Camcorder	4,346	$1,536,974.19	$484,041.19
		Computers	1,659	$349,989.27	$137,694.27
		Media Player	12,688	$3,585,613.72	$976,931.72
		Stereo Systems	10,607	$2,738,062.03	$817,195.03
		Televisions	4,301	$1,796,316.25	$443,139.25
		Video Production	1,909	$557,392.58	$170,352.58
	4	Accessories	6,127	$1,478,196.06	$458,077.06
		Camcorder	5,691	$1,871,848.70	$608,214.70
		Computers	2,493	$503,542.66	$195,915.66
		Media Player	14,943	$4,699,372.86	$1,250,601.86
		Stereo Systems	14,541	$3,790,147.58	$1,124,739.58
		Televisions	4,431	$1,540,975.20	$373,803.20
		Video Production	2,675	$753,824.57	$232,170.57

To better space out the values in your report, when using a paginated output format such as HTML, PDF, PowerPoint, or XLSX, you can change the cell margins. You can select preset small, medium, and large margin options, or click the ellipsis button to set custom cell margins. When setting custom margins, you can set different margin sizes for each side of the cells in your report. You can clear the checkboxes for different sides of the cells to use default values for them. For example, if you clear the checkbox for the Top margin, the default margins are used for the top of each cell. Custom margin sizes are set inches. You can use the Cell Margins settings in the General options to set margins for the entire report, or set margins for each area of the report individually by selecting a different option from the quick access menu. When setting margins using the Columns-level options, it may be preferable to set them separately for the column titles and data values. Since each line of text in the column titles is treated as a separate cell, you may prefer to use smaller top and bottom margins for them than for the cells containing data values.

To undo all custom styling changes made in the General options or Columns options, click **Reset styling**. All options revert to their default values, which are dependent on the theme used in the report.

Controlling Column Width

When you create a report, the width of each column depends on the values in the column, and the width of the page in which the report is displayed. Three options are available to set column width behavior. They are available in the Column Width menu, in the Other Options section of the General options on the Format tab.

The default column width option is **Fit to content**.

When you choose **Fit to content**, each column's width adjusts to fit the longest title or row, making sure that every value is fully shown while using less space.

If you change the Column Width option to **Fit to field length**, the maximum width of each column is based on the format of each field used in the report. If the report is filtered so that the longest values are not included, the column width is still wide enough to include those values.

Select **Custom width** to create a report with custom column width. You can truncate the column to a specific size using the **Truncated** option. Or you can wrap the column to a specific size using the **Wrapping** option.

Note that if your theme specifies values for the SQUEEZE or AUTOFIT options, that this may override the Column Width setting in WebFOCUS Designer.

Adding Margins to Report Headings and Footings

When you edit the text in the heading or footing of a chart or report, a set of basic text styling options appears in the styling toolbar at the top of the canvas. This toolbar provides options to change the font, text size, font style, alignment, text color, and background color of the heading or footing text. For more information about these options, see Adding Headers and Footers to Content.

You can set margins for the headings and footings in a report from the Format tab. Open the **Format** tab and then select **Headings** or **Footings** from the quick access menu. In the Heading Options and Footing Options areas, you can apply a preset margin by selecting the preset **Small**, **Medium**, or **Large** options, or you can select the custom margin option and

use a spinner control to set your own top and bottom margins separately. These can be set in intervals of 0.001 inches.

Formatting Column Group Labels in a Report

When you add a field to the Column Groups bucket in a report, measure columns are repeated for each value in that field. The column group, or across column, field values are shown above the column titles for each measure field, identifying the dimension values by which they are aggregated.

When creating a report with column group fields, such as a crosstab report, you can select **Column Groups** from the quick access menu on the Format tab to style the field names and values for each one. As when styling columns in a report, from the Select Elements and Columns menus, you can choose whether to style the field titles and values, or just one or the other. You can also choose whether to style the field titles and values for all column group fields, or a single column group field. Note that while the default field selection is **All Columns**, column group field names and values display in a row. **All Columns** in this case refers to all columns from your data source, and allows you to style column group field titles and values for all fields in the Column Groups bucket.

You can style column group field titles and values by changing the font, style, alignment, size, and color of the text; changing the background color of the title and values; and adjusting margins.

Customer Business Sub Region	Customer Country	Sale,Year / Sale Quarter	2015 Quantity Sold	2015 Revenue	2016 Quantity Sold	2016 Revenue	2017 Quantity Sold	2017 Revenue	2018 Quantity Sold	2018 Revenue	2019 Quantity Sold	2019 Revenue	2020 Quantity Sold	2020 Revenue
SA-Port	Brazil	1	2,913	$758,872.92	2,424	$696,323.37	3,230	$977,632.64	3,992	$1,208,934.86	7,827	$2,338,258.15	11,506	$3,543,181.76
		2	2,704	$754,038.17	2,402	$726,464.44	2,965	$871,365.78	3,916	$1,135,701.57	7,513	$2,248,101.13	11,048	$3,370,391.00
		3	2,786	$830,428.29	2,476	$757,953.22	3,098	$929,426.40	3,892	$1,144,110.09	7,556	$2,266,851.43	11,202	$3,410,163.83
		4	3,261	$953,077.54	2,839	$843,447.26	3,613	$1,097,622.47	4,728	$1,415,255.60	8,695	$2,660,081.25	13,076	$4,057,437.51

Customer Business Sub Region	Customer Country	Sale,Year / Sale Quarter	2016 Quantity Sold	2016 Revenue	2017 Quantity Sold	2017 Revenue	2018 Quantity Sold	2018 Revenue	2019 Quantity Sold	2019 Revenue	2020 Quantity Sold	2020 Revenue
SA-Span	Argentina	1	121	$36,972.02	237	$71,371.51	451	$134,132.41	1,128	$331,643.90	2,305	$733,850.62
		2	36	$13,222.94	163	$45,623.08	273	$86,068.07	1,290	$388,889.87	2,359	$723,122.37
		3	31	$10,626.43	135	$49,648.69	365	$115,185.13	1,209	$383,173.44	2,315	$729,792.09
		4	69	$24,776.34	288	$83,087.18	486	$134,938.27	1,510	$448,663.33	2,500	$747,160.23
	Chile	1	26	$8,494.90	62	$21,456.32	128	$38,534.80	371	$100,920.15	1,672	$492,892.81
		2	20	$8,772.07	60	$17,561.90	98	$37,152.65	375	$111,845.71	1,585	$470,194.13
		3	24	$5,962.78	48	$11,319.72	124	$37,608.52	316	$103,306.90	1,635	$505,128.92
		4	16	$4,153.56	68	$22,154.70	134	$52,312.80	618	$173,818.12	2,066	$635,053.55
	Colombia	1	119	$32,515.48	248	$65,653.68	446	$125,805.02	1,195	$356,998.75	2,118	$661,305.33
		2	38	$10,115.36	192	$56,986.40	306	$88,305.99	1,141	$341,219.41	2,239	$671,470.67
		3	48	$12,757.68	154	$39,297.93	378	$117,021.59	1,084	$341,864.84	2,036	$634,554.16
		4	50	$15,558.34	311	$87,747.48	506	$144,973.88	1,374	$418,698.79	2,555	$798,390.36

Styling Column and Row Totals in a Report

As with the data values in a report, you can apply styling to the row and column totals and subtotals in a report to visually separate them from the rest of the values in your report

and to draw attention to them. To add row and column totals to a report, on the Settings tab, in the Content Settings area, select **Enable column totals** and **Enable row totals**. To add subtotals, right-click a field in the Rows bucket of a report, point to **Insert breaks**, and select an option from the Subtotals section of the Insert breaks menu. To style your totals, on the Format tab, select **Totals** or **Row Totals** to display column or row total styling options. These options include text styling options, such as the font, style, alignment, size, and color; background color options; and cell margin sizing. Similar to when setting margins for column group labels, you can only set the top and bottom margins for column totals and left and right margins for row totals, since the other margins are based on the margins of the cells in the body of the report.

When styling row totals, from the Select Elements and Columns menu, you can choose whether the styling changes should affect the total label, values, or both. You can also choose which columns are affected if there are across columns in the report. When row totals are added to a report with column groups, a separate row total column is generated for each measure field in the report. Each of these row total columns can be styled separately by changing the text and cell styling. When there are no column group fields, all measure fields are summed into a single row total column to which your styling is applied.

Column totals, on the other hand, are arranged into a single row to which you can apply styling. You can style the grand totals or all subtotals, or you can select a specific sort field whose subtotals you want to style if you have multiple levels of subtotals for different sort fields. The following image shows different styling applied to the grand totals and subtotals in a report so that they can be easily distinguished.

2020	Accessories	209,571	$53,208,007.57	$16,362,313.57
	Camcorder	187,033	$63,107,166.95	$20,320,654.95
	Computers	188,736	$63,190,001.88	$18,677,664.88
	Media Player	315,783	$99,448,235.40	$22,237,625.40
	Stereo Systems	451,751	$118,579,626.69	$34,997,684.69
	Televisions	38,123	$30,964,700.29	$6,560,087.29
	Video Production	81,585	$23,810,094.17	$7,330,486.17
Subtotal: 2020		1,472,582	$452,307,832.95	$126,486,516.95
TOTAL		3,509,891	$1,061,192,925.20	$299,753,396.20

For column totals and subtotals, you style the total label and values separately using the Total Tag Options and Column Options areas. This allows you to differentiate between labels and values in your totals and subtotals. If you select a column in the Column Options area, you can apply different styling to the grand total or subtotal values for different measure fields. You can also change the background color for the grand total or subtotal rows and adjust the margins used for the grand total or subtotal cells.

Setting Page Layout Options

When creating reports for different types of output, you may want to change the page layout, depending on the type of file that is generated. For example, PowerPoint slides are typically landscape oriented, and a smaller size than PDF pages, which tend to be vertically oriented. You can set options such as page orientation, page size, and margins, separately for each output format, by selecting **Output Settings** from the quick access menu on the Format tab.

The settings specified in the Output Settings options are specific to each output format. If you change the output format of your report, then a separate set of page settings appears. This allows you to ensure that the report displays properly in all output formats, even when user output format selection is enabled.

The following page layout options are available for each output format:

- **Page Size.** You can set the size of the page on which the report displays to the following common standards:
    - **A3.** Sets the size of each page containing the report to 297 by 420 millimeters, or 11.7 by 16.5 inches.
    - **A4.** Sets the size of each page to 210 by 297 millimeters, or 8.25 by 11.7 inches.
    - **A5.** Sets the size of each page to 148 by 210 millimeters, or 5.8 by 8.25 inches.
    - **Letter.** The default. Sets the size of each page to 8.5 by 11 inches, or 216 by 279 millimeters.
    - **Tabloid.** Sets the size of each page to 11 by 17 inches, or 279 by 432 millimeters.
    - **Legal.** Sets the size of each page to 8.5 by 14 inches, or 216 by 356 millimeters.
    - **PowerPoint Slide.** Sets the size of each page to that of a standard PowerPoint slide, which is 7.5 by 10 inches, or 191 by 254 millimeters. This page size, like all other report page size settings, is portrait oriented by default. Change the page orientation of your report to **Landscape** to match the default page orientation used in Microsoft PowerPoint.
    - **Large Size.** Sets the size of each page to the ANSI E architectural paper size, which is 34 by 44 inches, or 864 by 1118 millimeters.
- **Orientation.** The direction in which the page is oriented. Select **Portrait** to align the longer sides of the page vertically, or **Landscape** to align them horizontally.

- **Page Margins.** The amount of blank space between the report and the top, bottom, and sides of the page. Page margins can be set on each side in increments of 0.001 inches. The report is aligned to the top left corner of the page by default, meaning that the right and bottom margins are only used if the report is wide or long enough to occupy more than one page.

  > **Note:** When a page margin is set to 0, the default margin size of 0.25 inches is used.

- **Page Features.** For reports, you can select the following options to customise your reports.
  - **Enable Title Popup.** Displays pop-up titles when the mouse pointer hovers over a column title in the report output. For more information, see Add Pop-Up Titles to a Report.
- **Interactivity.** For reports, you can create the following custom report output formats on the Format tab, including: Default Table, Table of Contents, Accordion, Freeze, and Pages on Demand.
  - **Default Table.** Generates standard browser output. This is the default.
  - **Table of Contents.** Generates output by displaying a table of contents icon in the upper-left corner where report output typically appears. Clicking **Table of Contents** opens a menu that enables you to select individual values of the first Sort By field, one value at a time.
  - **Accordion.** Creates expandable views of data for each vertical sort field. This option displays data values only for the first vertical sort field when you first view the output. You can manually expand your view to expose the data values of lower-level sort fields.
  - **Freeze.** The **Freeze** option allows you to define a scroll area within the data of your report. It locks the headings and footings in place, enabling you to scroll through the data within the container.
  - **Accessibility.** Allows a title to be added to a report, chart, or document that is Section 508 compliant. This option is only available for reports and charts when the output type is HTML or PDF. For documents, the output type must be set to PDF.

> **Note:** The chart features are unavailable when designing a chart that is output in HTML Analytic Document or PDF Analytic Document formats.

  - **Pages On Demand.** Provides access to two distinct features depending upon the output type that you have selected.
    - **HTML.** If you select this output type, and click **Pages On Demand**, then the report opens in the WebFOCUS Viewer. The WebFOCUS Viewer saves the bulk of your report to your web server and delivers one page of report output at a time, decreasing the amount of time that you wait for the report to process. The bulk of your report remains on the web server until you request it or close the WebFOCUS Viewer. The WebFOCUS Viewer menu bar, at the bottom of the Viewer, contains options for navigating through the pages.
    - **HTML Analytic Document.** If you select this output type, and click **Pages On Demand**, then active cache is enabled.

- **Analytic Document options.** You can configure analytic document options for interactive reports, including menu options, based on user role. The following are the options under the **Analytic Document options** dropdown:

Dropdown Option	Available Options
General	Use the General tab to set common properties specific to interactive, analytic reports. The General tab contains the following options: ◦ **Display**. This area contains options to set the window to cascade or tabs, and options to freeze columns. ▪ **Freeze columns**. Select the columns you would like to freeze. You can also select None. ◦ **Page Options**. This area contains options to set the number of records per page, enable the display of page information, edit the alignment, and set the location of the page information. ▪ **Records per page**. Select or type the number of records that you would like to display per page. The default value

	is 57. ■ **Display page information**. Select this option to display page navigation information. Clear this option to disable the display of page navigation information. ■ **Alignment**. Click the appropriate button to set the alignment of the page navigation information. Options are Left, Center, and Right. ■ **Location**. Select the location for the page navigation information. The options are Top Row and Bottom Row.
Menu options	Use the Menu Options tab to select a user type and which options to display in the menu. The Menu Options tab contains the following options: **Column Options**: ◦ **Freeze**. Freezes and unfreezes columns. ◦ **Hide/Unhide**. Hides and shows columns. ◦ **Sorting**. Sorts data in ascending or descending order. ◦ **Filter**. Filters the columns. ◦ **Visualize**. Adds data visualization bars to a report. ◦ **Rollup**. Performs rollup on data. ◦ **Comments**. Adds comments. **Container Options**: ◦ **New**. Creates new containers. ◦ **Edit**. To edit the container. ◦ **Export**. To export the container. ◦ **Print**. To print the reports. ◦ **Show records**. Shows all the records of a report. ◦ **Save changes**. Save the changes made to the report.

- **Restore original**. Restore the original report.
- **Show menu**. Shows the container menu.

UI Styling

Use the Colors tab to select colors for various objects on the report. The Colors tab contains the following options:

Page. This area contains options to set the colors for the font and background of the page text.

- **Font**. Opens the Color dialog box, where you can select the font color.
- **Background**. Opens the Color dialog box, where you can select the background color for the page text.

Row Selection. This area contains options to set the colors that appear when you point to or select a row on the report.

- **Hover**. Opens the Color dialog box, where you can select the color that the row becomes when you hold the mouse over the row.
- **Selected**. Opens the Color dialog box, where you can select the highlight color that the row becomes when you use the highlight option.

Visual. This area contains options to set the colors for the data visualization bars.

- **Positive**. Opens the Color dialog box, where you can select the color for a data visualization bar that represents a positive number.
- **Negative**. Opens the Color dialog box, where you can select the color for a data visualization bar that represents a negative number.

Calculations. This area contains options to set the colors for values in a calculation.

- **Font**. Opens the Color dialog box, where you can select the font color for the calculation.

- **Background**. Opens the Color dialog box, where you can select the background color for the calculation.

Menu. This area contains options to change the color of the menu.

- **Normal**
  - **Font**. Opens the Color dialog box, where you can select the color for the text of the options on the column menus.
  - **Background**. Opens the Color dialog box, where you can select the background color for the column menus.
  - **Border**. Opens the Color dialog box, where you can select the color for the border of the column menus.
- **Hover**
  - **Font**. Opens the Color dialog box, where you can select the color for the text of the options on the column menus when you point to them.
  - **Background**. Opens the Color dialog box, where you can select the background color that appears behind options on the column menus when you point to them.

Advanced

The Advanced tab contains the following options:

Cache. Enables a report to cache the data in a binary file and return the data to the output window in pre-set increments.

- **Rows Retrieved**. Select the number of rows retrieved in the output. The default value is 100.

Security. This area allows you to set a password to access the report and enable expiration by date or by days. This option is only available for the reports that have enabled an In-Document Analytics report output.

To revert the page layout settings for the selected output format to the default, click **Reset styling**. The default page layout settings are letter page size, portrait orientation, and 0.25 inch margins.

Converting Reports to Excel Tables

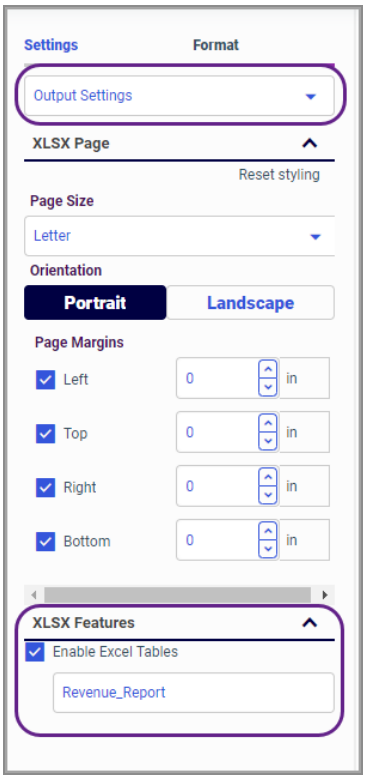
You can use the Excel Tables feature to utilize the Excel functionality and apply it to the reports created in WebFOCUS Designer. You do that by enabling the XLSX format and configuring your output settings.

Convert a Report to an Excel Table

Procedure

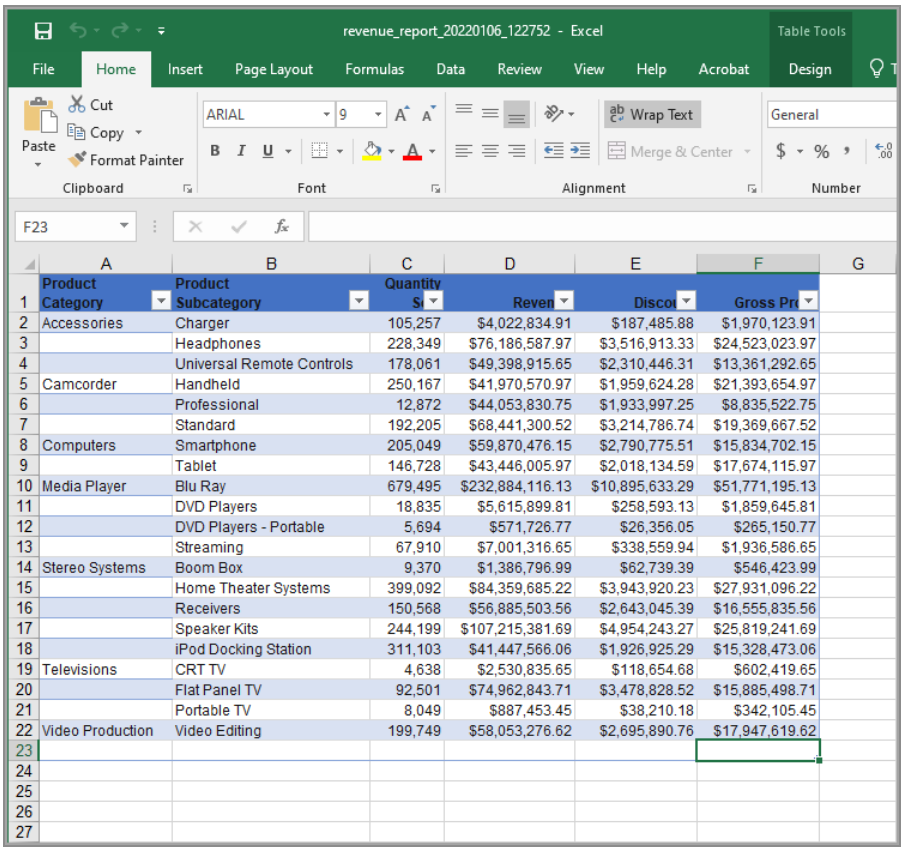
1. Create a report as described in Creating Reports.
2. In the **Output Format** menu above the canvas, select **XLSX**.
3. In the **Settings/Format** pane, click **Format**, and select **Output Settings** from the dropdown menu.
4. In the **XLSX Features** section, select the **Enable Excel Tables** checkbox and, optionally, edit the name field below to give your Excel table a unique identifier.

   An example of the fully configured Format pane for an Excel-optimized report is shown in the following image.



5. Save your report and exit WebFOCUS Designer.
6. On the WebFOCUS Hub, right-click your newly created report, and click **Run**.

   The Excel file with the report automatically downloads to your computer. An example of the Excel version of the report created in WebFOCUS Designer is shown in the following image.



	A	B	C	D	E	F	G
1	Product Category	Product Subcategory	Quantity S	Reven	Disco	Gross Pr	
2	Accessories	Charger	105,257	$4,022,834.91	$187,485.88	$1,970,123.91	
3		Headphones	228,349	$76,186,587.97	$3,516,913.33	$24,523,023.97	
4		Universal Remote Controls	178,061	$49,398,915.65	$2,310,446.31	$13,361,292.65	
5	Camcorder	Handheld	250,167	$41,970,570.97	$1,959,624.28	$21,393,654.97	
6		Professional	12,872	$44,053,830.75	$1,933,997.25	$8,835,522.75	
7		Standard	192,205	$68,441,300.52	$3,214,786.74	$19,369,667.52	
8	Computers	Smartphone	205,049	$59,870,476.15	$2,790,775.51	$15,834,702.15	
9		Tablet	146,728	$43,446,005.97	$2,018,134.59	$17,674,115.97	
10	Media Player	Blu Ray	679,495	$232,884,116.13	$10,895,633.29	$51,771,195.13	
11		DVD Players	18,835	$5,615,899.81	$258,593.13	$1,859,645.81	
12		DVD Players - Portable	5,694	$571,726.77	$26,356.05	$265,150.77	
13		Streaming	67,910	$7,001,316.65	$338,559.94	$1,936,586.65	
14	Stereo Systems	Boom Box	9,370	$1,386,796.99	$62,739.39	$546,423.99	
15		Home Theater Systems	399,092	$84,359,685.22	$3,943,920.23	$27,931,096.22	
16		Receivers	150,568	$56,885,503.56	$2,643,045.39	$16,555,835.56	
17		Speaker Kits	244,199	$107,215,381.69	$4,954,243.27	$25,819,241.69	
18		iPod Docking Station	311,103	$41,447,566.06	$1,926,925.29	$15,328,473.06	
19	Televisions	CRT TV	4,638	$2,530,835.65	$118,654.68	$602,419.65	
20		Flat Panel TV	92,501	$74,962,843.71	$3,478,828.52	$15,885,498.71	
21		Portable TV	8,049	$887,453.45	$38,210.18	$342,105.45	
22	Video Production	Video Editing	199,749	$58,053,276.62	$2,695,890.76	$17,947,619.62	
23							
24							
25							
26							
27							

You can now use Excel features to modify and enhance your report.

Creating and Customizing Documents

Document mode of WebFOCUS Designer allows you to add images, reports, and charts to create documents that can be used to generate presentation-ready reports and share them with other users and groups in your organization.

In Document mode, you have the opportunity to combine charts and reports with styled formats, such as PDF, as well as embed image files, including graphs saved as images, in a compound document.

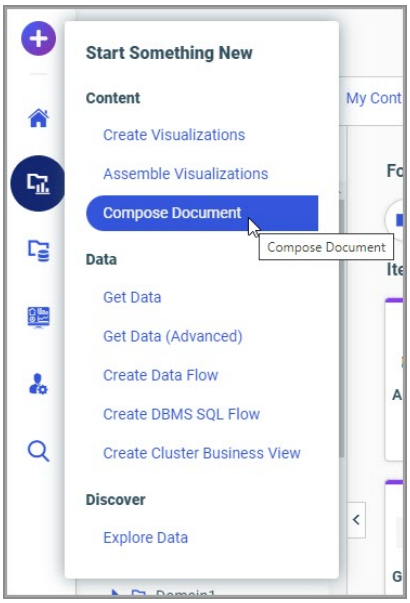
Accessing and Navigating Document Mode

In WebFOCUS Designer Document mode, you can:

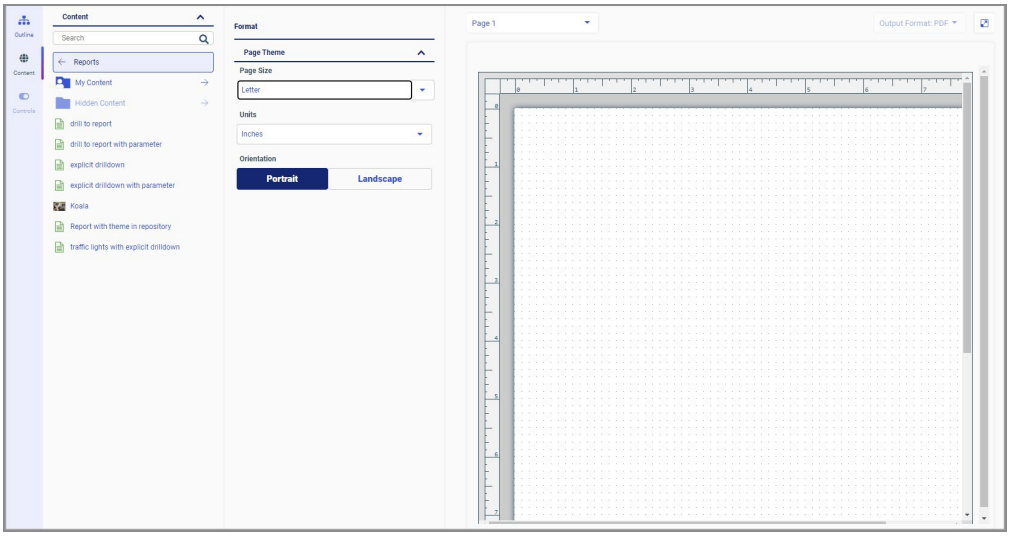
- Create a document or edit an existing document.

- Build a document using content that resides in your repository.
- Combine reports, charts, and images in a single document.
- Add pages to your document.
- Save your final document as a PDF for easy access and distribution.

To open WebFOCUS Designer in Document mode, on the WebFOCUS Hub, click the Plus button and then click **Compose Document**, as shown in the following image.



WebFOCUS Designer opens. The blank document mode interface is shown in the following image.



The main features of the Document mode interface include:

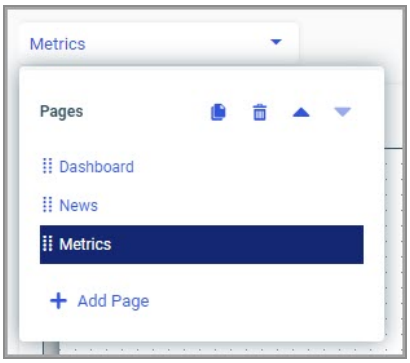
- **Canvas:** The pixel-perfect canvas of the Document mode allows you to move and position your content with precision. When you add items to the document canvas, they may overlap. You can resize an item by dragging the lower corner of its container. To move an item, click and drag it to a desired location on the canvas. The rulers on the top and left edges of the canvas provide additional help in designing your layout. When an item is selected on the canvas, a dotted line appears around it as an indicator. You can multi-select items by holding the Shift key and clicking them. You can move multi-selected items together by clicking and dragging one of the items.
- **Pages dropdown box:** The Pages dropdown box allows you to add new pages, change the order of existing pages, and configure your page options. The page options, displayed on the top of the Pages dialog, include:
    - **Duplicate page:** Creates an exact copy of the selected page and adds it to the selected page.
    - **Delete page:** Deletes the selected page.

      > **Note:** When you click the Delete page icon, the confirmation pop-up message appears where you can confirm or cancel your deletion request.

    - **Move page up:** Moves the page up on the list.
    - **Move page down:** Moves the page down on the list.

      > **Note:** Another way to move pages up and down is to click and drag them to a desired position on the list.

  Click **Add page** to add a page to your document. To rename a page, double-click its name on the list and type a new name. An example of the Pages dialog is shown in the following image.



- **Format panel:** Displays options for the element that is selected on the canvas.

  The format options for a page include:

  - **Page size:** Provides a choice between the page sizes for your document. The options are: **A3, A4, A5, Letter, Tabloid, Legal, PowerPoint Slide**, and **Large Size**. The default option is **Letter**.
  - **Units:** Selects the type of measuring unit for the rulers. The options are: *Points*, *Pixel*, *Centimeters*, and *Inches*. The default option is *Centimeters*.
  - **Orientation:** Allows you to alternate between the **Portrait** and **Landscape** orientations of the page. The default option is Portrait.

  The format options for an item include:

  - **Height and Width:** Reflects the existing height and width of the selected item. Allows you to set a specific height and width for an item on the canvas.
  - **Lock Aspect Ratio:** If selected, allows you to preserve the original proportions of the item, which remain the same when you resize it using the Height and Width options.

- **Display:** Includes buckets to which you can add fields to author content in a document. This includes the Coordinated bucket, which is unique to documents. You can add a sort field here to generate separate pages in the document for each value of the field. Content on each page is filtered based on the value of the coordinated field.
- **Resources panel:** Allows you to navigate the repository to select content for your document. You can click the folders and use the back arrow to navigate through your repository. To add a specific item to your document, use the search feature in the **Context** tab of the **Resource** panel.

Composing a Document

WebFOCUS Designer in the Document mode allows you to work with charts, reports, and images on the same canvas. You can view your final document in the preview mode and save it as a PDF to easily share it with other users and groups.

When working with existing analytical content, it is important to remember that, when inserted, these components are referenced but remain independent, supporting modular development with reusable content. Modifications must be made in the individual components separately. These updates are then reflected in the document during generation.

Note: The current version of the WebFOCUS Designer Document mode does not support charts that were created in InfoAssist.

Compose a Document

Procedure

1. On the WebFOCUS Hub, click the Plus button, and then click **Compose Document**.

   The WebFOCUS Designer opens in the Document mode.

2. In the Resources panel, navigate to the existing content of your choice, such as chart, report, or image, then drag the item onto the canvas.

   The item displays on the canvas.

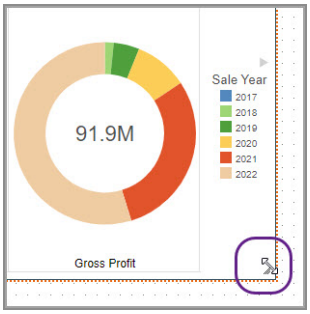
   Note: Charts and reports display inside a container frame 3.5 inches high and 5 inches wide. Images are added at their actual size. All items can be resized. Resizing images might distort them, so it is the best practice to use the Height and Weight options with the Lock Aspect Ratio checkbox selected when resizing images.

3. Optionally, repeat step 2 to add more items.

4. Move and resize items on the canvas to achieve a desired layout.

   To move an item on the canvas, click and drag it to a position of your choice. To

resize an item, hover your cursor over the lower-right corner of the container to see the sizing handles appear, as shown in the following image. Use the handles to resize your item.



5. To delete a component, right-click it and click **Delete**.

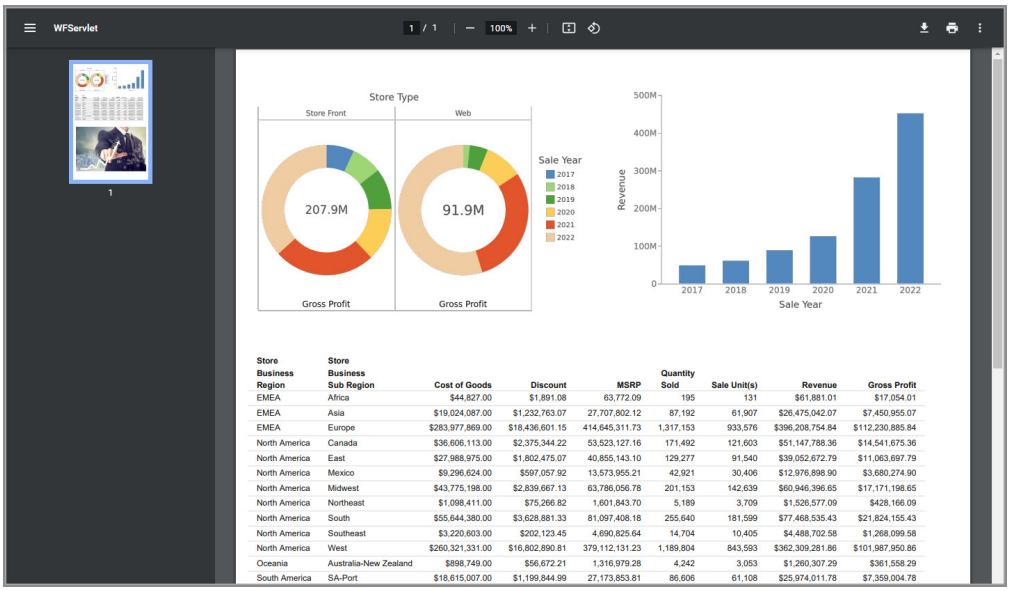
   The component is removed from the canvas.

6. Optionally, add a page to your document by clicking the Page dropdown box and then clicking Add Page.

   Follow the methods described in Accessing and Navigating Document Mode to edit and organize the pages of your document.

7. Once you are happy with your layout, preview your document by clicking the **Run in new window** button.

   The document runs in the new browser window. An example of the finished document run in the preview mode is shown in the following image.



Store Business Region	Store Business Sub Region	Cost of Goods	Discount	MSRP	Quantity Sold	Sale Unit(s)	Revenue	Gross Profit
EMEA	Africa	$44,827.00	$1,891.08	63,772.09	195	131	$61,881.01	$17,054.01
EMEA	Asia	$19,024,087.00	$1,232,763.07	27,707,802.12	87,192	61,907	$26,475,042.07	$7,450,955.07
EMEA	Europe	$283,977,869.00	$18,436,601.15	414,645,311.73	1,317,153	933,576	$396,208,754.84	$112,230,885.84
North America	Canada	$36,606,113.00	$2,375,344.22	53,523,127.16	171,492	121,603	$51,147,788.36	$14,541,675.36
North America	East	$27,988,975.00	$1,802,475.07	40,855,143.10	129,277	91,540	$39,052,672.79	$11,063,697.79
North America	Mexico	$9,296,624.00	$597,057.92	13,573,955.21	42,921	30,406	$12,976,898.90	$3,680,274.90
North America	Midwest	$43,775,198.00	$2,839,667.13	63,786,056.78	201,153	142,639	$60,946,396.65	$17,171,198.65
North America	Northeast	$1,098,411.00	$75,266.82	1,601,843.70	5,189	3,709	$1,526,577.09	$428,166.09
North America	South	$55,644,380.00	$3,628,881.33	81,097,408.18	255,640	181,599	$77,468,535.43	$21,824,155.43
North America	Southeast	$3,220,603.00	$202,123.45	4,690,825.64	14,704	10,405	$4,488,702.58	$1,268,099.58
North America	West	$260,321,331.00	$16,802,890.81	379,112,131.23	1,189,804	843,593	$362,309,281.86	$101,987,950.86
Oceania	Australia-New Zealand	$898,749.00	$56,672.21	1,316,979.28	4,242	3,053	$1,260,307.29	$361,558.29
South America	SA-Port	$18,615,007.00	$1,199,844.99	27,173,853.81	86,606	61,108	$25,974,011.78	$7,359,004.78

8. Close the preview and save your document.

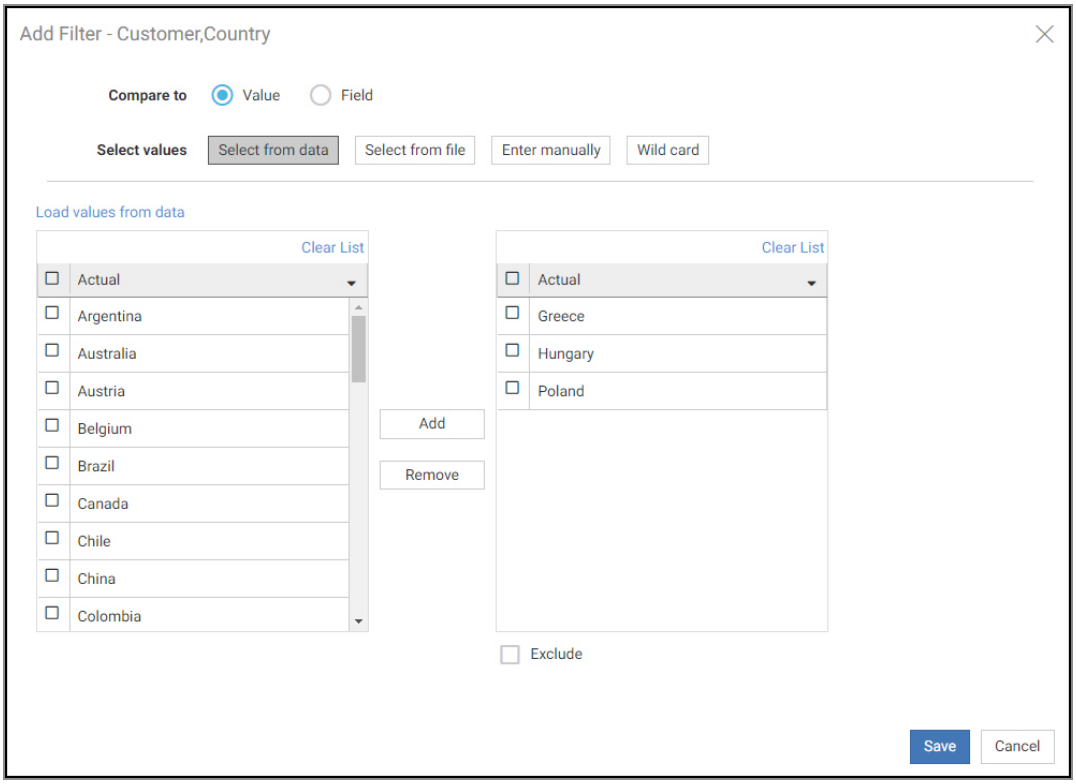
   Once the document is saved in the repository, you can edit it, move it to another domain or folder, schedule it for distribution, run it, create a shortcut to it in another location, share it with other users, and more.

Adding Filters to Visualization

As you create charts and styled tabular content in WebFOCUS Designer, you may want to narrow the display of information that is shown. You can do this by creating filters for fields in your data source. You can also use filters as a way to create custom displays of the data that you show in your content. For example, you may only want to show revenue information for specific product categories and models in a given year, or for product categories that exceed a certain revenue value.

Filters in WebFOCUS Designer can utilize one of two behaviors: static and prompted filtering. Static filters are applied to individual content items at design time, and allow you to apply consistent filter values to a chart or report. Prompted filters, on the other hand, allow users to select the filter values to use in your content at run time. When you create a prompt filter, it affects all new content on the page. In addition to adding prompted filters to new content, when existing content using a prompted filter is added to a page, you can create automatic filter controls that can be used at run time. Any content that uses the same parameters can be filtered using the same control. These controls are not generated for static filters.

To create a static filter for a selected field, drag it from the Fields tree on the Resources panel to the Filter bucket, which is located below the field container buckets on the Properties panel when you select a content item. When you create a static filter, the Add Filter dialog appears, as shown in the following image.



You can select filter values and the relationships those values have to the data that you want to display in your chart or report. Static filters can only be created for new content.

You can add prompted filters to a visualization using new or existing content in one of the following ways:

- When creating content, drag a data field to the Filter toolbar below the page toolbar.
- When creating content, right-click a data field and click **Add to filter toolbar**.
- When creating or interacting with new content, select one or more sections of a chart by clicking or lassoing them, then click **Keep**.
- When creating or interacting with new content, use the filter options in the In-Document Analytics menu on the column of a report.
- When creating a visualization from existing content, add an item that uses dynamic parameter filters to the visualization.

Click the resulting label on the Filter toolbar to open a control, from which you can select default filter values. Users are able to change the selected value at run-time.

Adding Static Filters to Content

Filters allow you to limit the data that displays in your content, making it easier to find useful information by removing extraneous data values. You can create prompted filters, which allow users to select the filter values to use in your content at run time, or you can create static filters, which are always applied to your content whenever it is run. Prompted filters allow you to create controls when the content that uses them is added to an assembled page, while static filters do not. Additionally, prompted filters affect all new content on the page, or any referenced content that uses the filter. Static filters, on the other hand, affect only the item for which the filter was created.

Static filters are a good choice when you want the same filter values to be applied to your content at all times, or want to create a filter that only affects a single content item.

To create a static filter, when creating a chart or report, drag a field into the Filters bucket on the Settings tab of the Properties panel. The Add Filter dialog opens, and presents options relevant to the type of field that you are filtering.

These options also differ depending on whether you are filtering compared to selected values or to another field. You can change this option by setting the Compare to option to **Value** or **Field**.

> **Note:** Master files can also be used as static filters. You can also add filters from a Master File to your content. These filters can be set up with a preset filter value, and can be set to true or false in your chart or report.

When you set the Compare to option , **Value** you can filter alphanumeric fields using the following options:

- **Select values.** When using the Value comparison type, select the values that are used to define the filter.
    - **Select from data.** Search for and select values from the data source used in your content.

      Click **Load values from data** to display all available values from the selected

field in the left list. Select one or more values and click **Add** to add them to the list of selected filter values on the right. To remove a value from the list of selected filter values, select one or more values and click **Remove**. You can also click **Clear List** to remove all selected values.

- **Select from file.** Allows you to pull data values from a file on your system. You can select a delimited flat file, such as a CSV file, or an Excel spreadsheet from which to import values for selection. These values are taken from the first column of the file. This option can be an easy way to select a large number of values that are found in another data source.

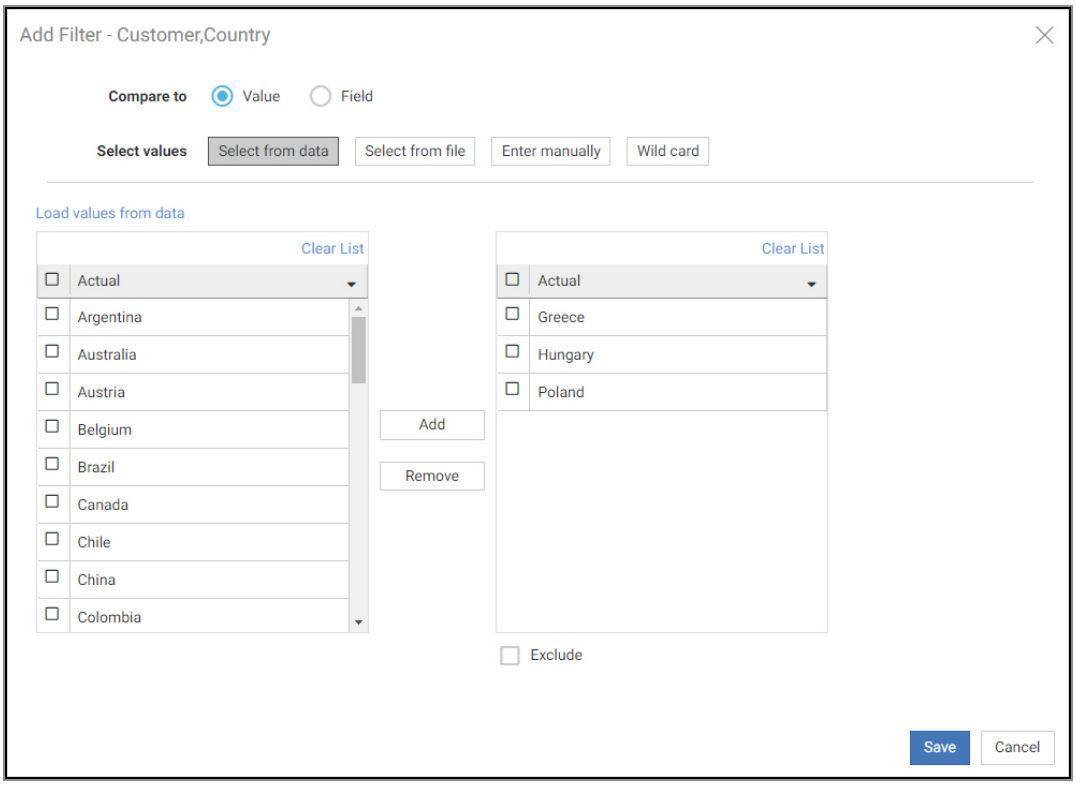
  Click **Load values from file** to select a data file and display all available values from it in the left list. Select one or more values and click **Add** to move them to the list of selected filter values on the right. To remove values from the list of selected filter values, select one or more values and click **Remove**, or click **Clear List** to remove all values.

- **Enter manually.** Type a value and click **Add** or press the Enter key to move it to the list of selected filter values on the right. Multiple values must be typed separately. You can also choose whether to include missing or blank values in the filter. To remove a value from the list of selected filter values, select one or more values and click **Remove**, or click **Clear List** to remove all selected values.

- **Wildcard.** Manually type a single string that you can use to select multiple filter values. You can specify that the values in your content should start with the string, end with the string, or contain the string at any point. Wildcard value filtering is case-sensitive. You cannot use a wildcard filter value at the same time as specified values.

- **Exclude.** Available when using the Value comparison type. When the **Exclude** checkbox is selected, the values selected for the filter are excluded from the request. When cleared, which is the default state, the selected values are included.

The Add Filter dialog when filtering an alphanumeric field is shown in the following image.



When you set the Compare to option to **Value**, you can filter numeric fields using the following options:

- **Select values.** Select the values or field that are used to define the filter.
    - **Select ranges.** Provides options to specify a range of values for your filter. When selecting data ranges, you can apply an aggregation option to use when filtering the selected field. Use None to filter on data values before aggregation, or use a different aggregation to filter on sorted values, aggregated by the selected operation. For example, use Summary to filter by measure values summed for each sort value. For more information, see Summarizing Numeric Data Using Filters.
        - **Single value.** Select a filter operator, then filter for all values before or after a selected start or end point. You can select a value using the slider or type a value into the text box.
        - **Range of values.** Set a static range of values to use for the filter. Select a start and end point using the slider or text boxes, and set filter operators for each.

      You can type a value that is outside the range of values in your data. In this

case, the text box displaying the value is outlined in purple and a message indicates that the value is out of range.

- **Select from data.** Search for and select values from the data source containing the filter field.

  Click **Load values from data** to display all available values from the selected field in the left list. Select one or more values and click **Add** to add them to the list of selected filter values on the right. To remove a value from the list of selected filter values, select one or more values and click **Remove**. You can also click **Clear List** to remove all selected values.

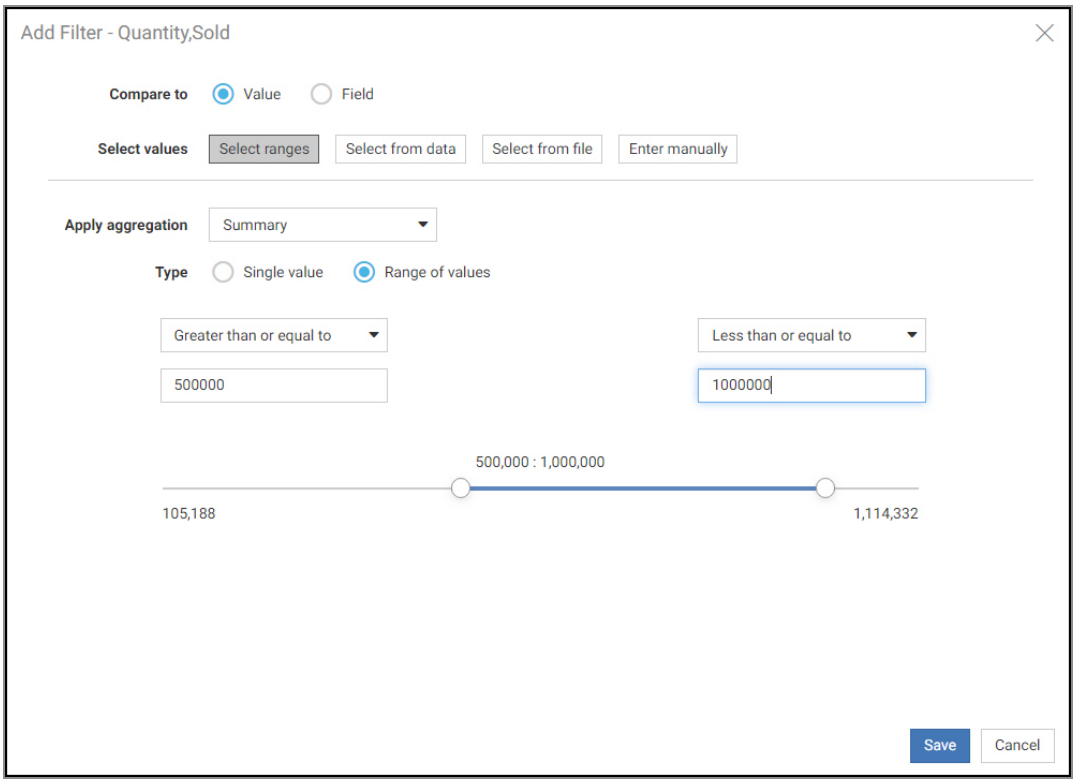
- **Select from file.** Allows you to pull data values from a file on your system. You can select a delimited flat file, such as a CSV file, or an Excel spreadsheet from which to import values for selection. These values are taken from the first column of the file. This option can be an easy way to select a large number of values that are found in another data source.

  Click **Load values from file** to select a data file and display all available values from it in the left list. Select one or more values and click **Add** to move them to the list of selected filter values on the right. To remove values from the list of selected filter values, select one or more values and click **Remove**, or click **Clear List** to remove all values.

- **Enter manually.** Type a value and click **Add** or press the Enter key to move it to the list of selected filter values on the right. Multiple values must be typed separately. You can also choose whether to include missing or blank values in the filter. To remove a value from the list of selected filter values, select one or more values and click **Remove**, or click **Clear List** to remove all selected values.

- **Exclude.** Available when using the Value comparison type. When the **Exclude** checkbox is selected, the values selected for the filter are excluded from the request. When cleared, which is the default state, the selected values are included.

The Add Filter dialog when filtering a measure field is shown in the following image.



When you set the Compare to option to **Value**, you can filter date fields using the following options:

- **Select values.** Select the values or field that is used to define the filter.
  - **Select ranges.** Provides options to specify a range of dates for your filter.
    - **Single date.** Filter for all dates before or after a selected start date or end date, by selecting a filter operation and a date value.
    - **Range of dates.** Set a static range of dates to use for the filter by selecting a start and end date and setting filter operators for each.
  - **Select from data.** Search for and select values from the data source containing the filter field.

    Click **Load values from data** to display all available values from the selected field in the left list. Select one or more values and click **Add** to add them to the list of selected filter values on the right. To remove a value from the list of selected filter values, select one or more values and click **Remove**. You can also click **Clear List** to remove all selected values.
  - **Select from file.** Allows you to pull data values from a file on your system. You can select a delimited flat file, such as a CSV file, or an Excel spreadsheet from

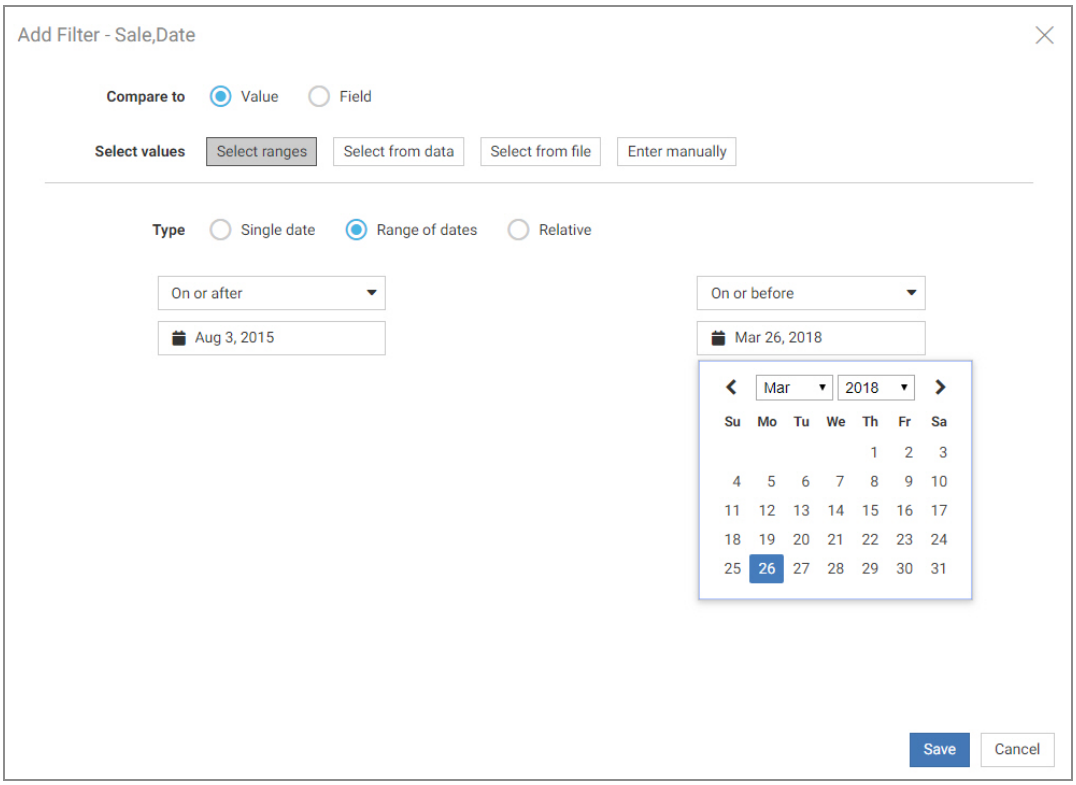
which to import values for selection. These values are taken from the first column of the file. This option can be an easy way to select a large number of values that are found in another data source.

Click **Load values from file** to select a data file and display all available values from it in the left list. Select one or more values and click **Add** to move them to the list of selected filter values on the right. To remove values from the list of selected filter values, select one or more values and click **Remove**, or click **Clear List** to remove all values.

- **Enter manually.** Type a value and click **Add** or press the Enter key to move it to the list of selected filter values on the right. Multiple values must be typed separately. You can also choose whether to include missing or blank values in the filter. To remove a value from the list of selected filter values, select one or more values and click **Remove**, or click **Clear List** to remove all selected values.

- **Exclude.** Available when using the Value comparison type. When the **Exclude** checkbox is selected, the values selected for the filter are excluded from the request. When cleared, which is the default state, the selected values are included.

The Add Filter dialog when filtering a date field is shown in the following image.

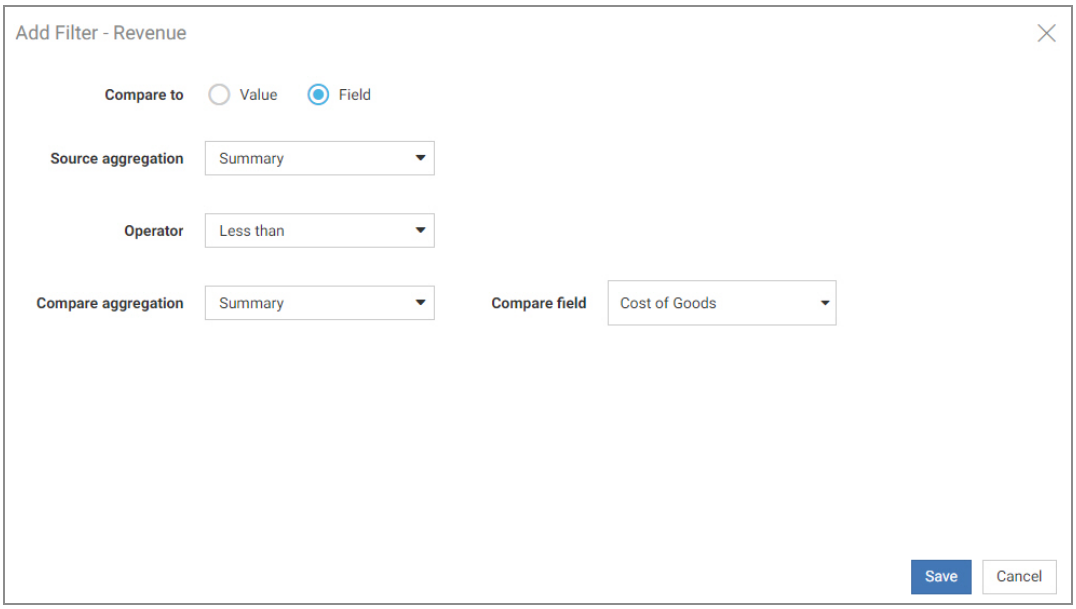


Set the Compare to value to **Field** to filter the selected field in relation to another field in the request. For example, you could use this filter to identify values for which the revenue was less than the cost of goods sold. When filtering by compared field values, the following options are available:

- **Source aggregation.** Available only for numeric fields. Select an aggregation option to use for filtering the selected field. Use None to filter on data values before aggregation, or use a different aggregation to filter on sorted values, aggregated by the selected operation. For example, use Summary to filter by measure values summed for each sort value.
    - **Operator.** Set the relationship that defines how the filter is applied. Options are:
        - **Equal to.** Values display in your content if they match the specified filter values.
        - **Not equal to.** Values display in your content if they do not match the filter values.
        - **Greater than or equal to.** Values display in your content if they match the selected filter values, come after them alphabetically, or have a higher numeric value.
        - **Greater than.** Values display in your content if they come after the selected filter value alphabetically or have a higher numeric value.
        - **Less than or equal to.** Values display in your content if they match the selected filter value, come before it alphabetically, or have a lower numeric value.
        - **Less than.** Values display in your content if they come before the selected filter value alphabetically or have a lower numeric value.
    - **Compare aggregation.** Select an aggregation to apply to the field that the selected field is being compared to. Use None to compare to data values before aggregation, or use a different aggregation to compare to sorted values, aggregated by the selected operation. For example, use Summary to compare values from the selected field to values in the comparison field summed for each sort value.
    - **Compare field.** When using the Field comparison type, provides a list of fields in your data source. Values from the field for which you are creating the filter are compared to those in the comparison field and filtered out based on the

selected operator.

The Add Filter dialog when filtering a numeric field by comparison to another field is shown in the following image.



Grouping Filter Expressions

You can group various filter expressions using AND or OR for complex combinations. By changing the default AND relationship to an OR relationship, you can filter the content by two criteria that otherwise cancel each other out. All filters in a group use the same AND or OR connector, but filters in subgroups can use different connectors. These subgroups can be used to apply complex logic.

The following procedure is supplemented with an example of a report that shows sales of computers in Europe and Canada. To group the filters, perform the following steps:

1. Create a report and add the filters. For example:
   a. Product Category EQ Computers
   b. Business Subregion EQ Europe
   c. Country Name EQ Canada

   Currently, as the Business Subregion Europe and Country Name Canada use an AND

relationship by default and there are no records with both of these values, no data is returned. By changing the relationship between these fields to OR, we can get data for either Europe or Canada.

2. On the Filter menu, click Edit Filter Expression. For example, create a filter expression to connect the Business Subregion and Country Name filters with an OR connector.
    a. Drag Business Subregion onto Country Name to create a group.
    b. Click the vertical ellipsis button for the group and click **Change the group to OR**.
3. Click Apply.

Now if you run the report, the data for both Europe and Canada is included.

Note:
- This option is available only for static filters.
- You can add filters specific to each item on a page.
- You must add at least two items per group.

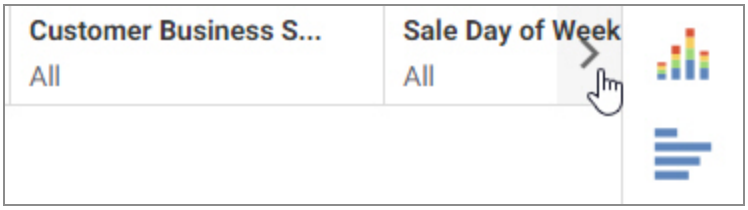
Adding Prompted Filters to Visualization

As you create charts or styled tabular content in WebFOCUS Designer, you may want to narrow the display of information that is shown. You can do this by creating filters for data fields in your content. You can also use filters as a way to create custom displays of the data that you show in your content. For example, you may only want to show revenue information for specific product categories and models in a given year.

Prompted filters can be created for external content added to a page, in which case any parameters in that content can be added as filter prompts, or for new content, in which case the filter affects all new content on the page.

When you add filtered content to a page, you can open the Filters tab on the sidebar and click **Add all filters to page** to add the filters to the page automatically, providing interactive controls that your users can choose from to change the view of data available to them. Filtered content can also be kept stand-alone, and you can choose to enable parameter prompting, which requires a user to make a selection before the content displays. There is no limit to the number of filters that you add, however, as you add more than five filters, all filters may not fit on your screen. If you are using a carousel filter

layout, used for prompted filters added to new content, you can use the arrow control to scroll over to see any filters that are not visible in the Filter toolbar, as shown in the following image.



If you are using a columnar layout, which is used for a visualization assembled from existing content, the filters are split into additional rows as they exceed the number of columns on the page, as shown in the following image.

You can add prompted filters to a chart or styled tabular content in one of the following ways:

- When creating content, drag a data field to the Filter toolbar below the page toolbar.
- When creating content, right-click a data field and click **Add to filter toolbar**.
- When creating or interacting with new content, select one or more sections of a chart by clicking or lassoing them, then click **Keep**.
- When creating or interacting with new content, use the filter options in the In-Document Analytics menu on the column of a report.
- When creating a visualization from existing content, add an item that uses dynamic parameter filters to the visualization.

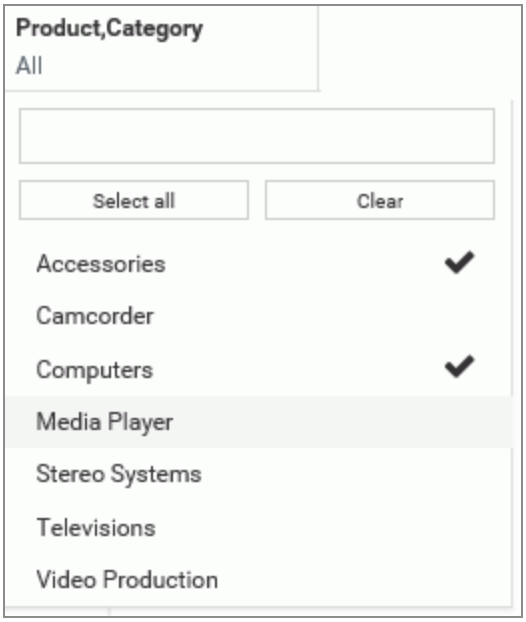
Note: You can add data fields to the filter toolbar even if you do not have it displayed in your view.

You can remove filters from the filter toolbar by clicking the **X** in the upper-right corner of the filter, or by right-clicking the filter and then clicking **Delete**.

You can create a maximum of one filter per measure field, and a maximum of two filters per dimension field, for individual dimension field values and for an aggregation of the dimension field. The aggregation of a dimension field can be a count, a count of distinct

values, or a percent of count. You can create an aggregated dimension filter by adding the dimension to your content as a measure, right-clicking the aggregated field in a measure bucket, and then clicking **Add to filter toolbar**. If you right-click a field that already has a filter and click **Add to filter toolbar**, or drag it into the filter toolbar, the existing filter control expands for you to select filter values.

Once you have created filters, you can click them to select default data values and set selection options for each filter. For example, when you create a filter using a dimension, it lists the available data values. You can then select the default filter values, as shown in the following image.



By default, no values are initially selected in the list control, which means that all values are displayed by default. To select default values, you click the filter control, and begin clicking the data values that you want to use as the default, then click outside the filter control area to apply the selection.

If you select one or two values, each selected value is listed by name in the filter control. If you select three or more values, the filter control shows the number of values selected out of the total number of available values. If no values are selected, the filter control says All. All available filter values are reflected in your content. If you select all listed values or click **Select all**, then the filter indicates that *n* of *n* values are selected. If the values in the field change in the data source, then the filter does not dynamically update to include them like it would if no values had been explicitly selected.

The selected values are displayed in the chart at run time by default, and users can select other values to display them.

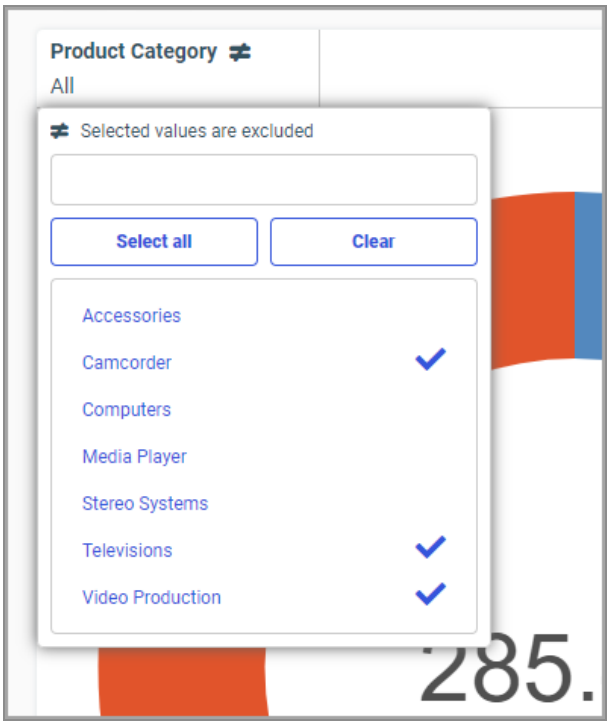
Note: In charts, reports, and visualizations with new content, dropdown list controls and slider controls have a default record limit of 5000 values. Values beyond this limit are not available for selection in the filter control. There is no record limit for filters in visualizations assembled from existing content, or in calendar controls.

You can change this record limit from the Administration Console, on the Other page of the Configuration tab, using the Designer/InfoAssist record limit setting. You can increase or decrease the record limit, or set it to 0 to display all values in filter controls. Displaying all values may result in performance issues, however.

When multiple prompted filters for alphanumeric dimension fields are created in a visualization created with new content, they are chained in all directions, by default. This means that the selection from one prompted filter control automatically filters and updates the available values in the other controls, so they only display relevant values. This ensures that you cannot select filter values that result in no data displayed in the visualization. You can change the chaining setting from multidirectional chaining to hierarchical chaining, or turn chaining off, from the Filter options menu.

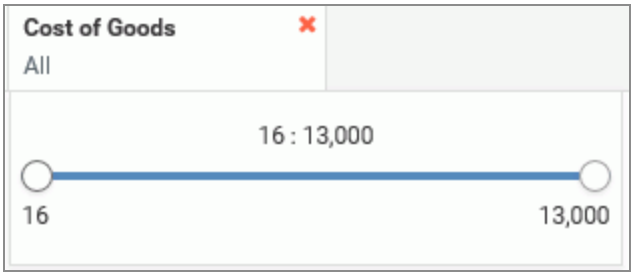
In pages assembled from existing content, chaining is unidirectional, applied only to filters lower in the chaining hierarchy than the filter for which you selected values. Filters for fields in the same hierarchy are chained automatically, and you can drag a field onto another field in the filter list in the Filters tab to manually make it a child of that filter for chaining purposes. For more information about filter chaining in new content and pages assembled from existing content, see Chaining Filter Control Selections.

When creating prompted filters for new content, you can choose to exclude data values from the list. To do this, right-click the filter and select **Exclude**. The not equal icon is added to the filter label to indicate that the selected values are excluded. You can then click the filter control again, and begin clicking the data values that you want to exclude from the list, as shown in the following image. Once you have selected the data values that you want to exclude, your chart refreshes. At run time, instead of choosing which values to display in the chart, users select values to exclude from the chart.



You can also set a prompted filter for new content to use a single value instead of multiple values. If you right-click a prompted filter for new content and click **Single**, when you click the filter control again, you are only able to select a single value. In filters for existing content, you have already defined whether the filter is multiselect or single-select.

If you add a filter using a numeric field, such as a measure, Cost of Goods, you can use a slider to adjust the range of data values that display, as shown in the following image.



Click the filter, and use the slider options on either side to modify the range of data values. You can set a range using both ends of the slider. To select a single value, set both ends of the slider to the same value.

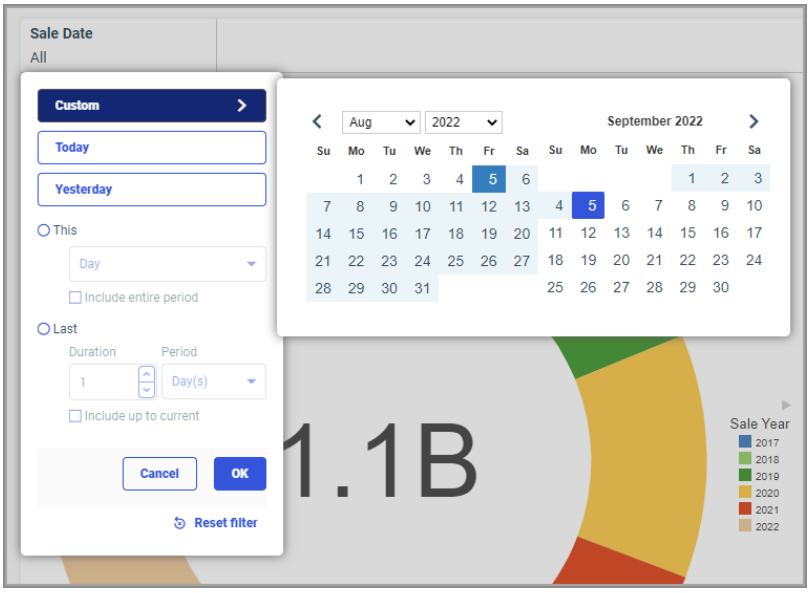
The filter for a numeric field is applied after aggregation by default. That means that the filter is applied based on summed values for all sort values in the chart instead of filtering each row of the data source before aggregation. You can right-click a new prompted filter and point to **Aggregation** to select a different aggregation operation, or select **Detail** to

apply the filter to each row before aggregation. For more information, see Summarizing Numeric Data Using Filters.

If you right-click a new numeric filter and select **Greater than or equal** or **Greater than**, you can select a minimum value for the filter range. The upper limit on the slider is fixed and cannot be moved. Selecting **Greater than or equal** includes the value indicated by the slider in the filter, while selecting **Greater than** excludes this value. Similarly, if you right-click a numeric filter and select **Less than or equal** or **Less than**, you can select a maximum value to display. The lower limit on the slider is fixed and cannot be moved. Selecting **Less than or equal** includes the value indicated by the slider in the filter, while selecting **Less than** excludes this value. The slider displays the greater than (>), less than (<), greater than or equal to (≥), and less than or equal to (≤) symbols to differentiate your choices.

Note: Selecting the full range of values in the slider includes all values in the filter. The value indicated by the slider head is not excluded in this case, even if the **Greater than** or **Less than** filter options are used.

If you add a date field, you can use the date picker window to select a start or end date, range of dates, and more, as shown in the following image.

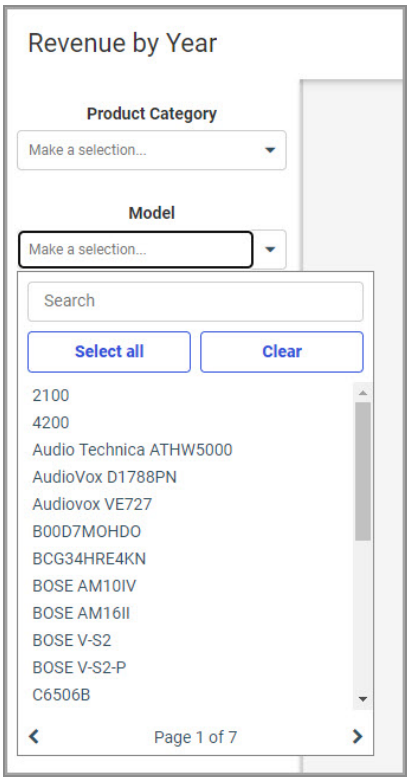


You can use a default range available in the list on the left, or select your own range of dates from the calendar. Click the same date twice to select a single day.

If you right-click a new date filter and select **After** or **Before**, you are unable to select a range using either the preset or custom range options. Instead, use the calendar to select a start or end date for the filter.

Similar to filtering a numeric field, you can right-click a date filter control and click **On or after** or **On or before**, as an alternative to **After** or **Before**, to include the start or end date selected in the calendar. The **After** and **Before** options do not include the selected date in the date range of the filter.

In addition to the options specific to each type of filter, you can make the filter require. When a filter is required, filtered content will not load until the user makes a selection for that filter. To make a prompted filter for new content required, right-click the filter and click **Require selection**. To make a prompted filter for existing content required, select the filter control and, on the Settings tab of the Properties panel, clear the **Optional** checkbox. When this content item runs, the autoprompt window displays, prompting you to choose a value from the dropdown list, as shown in the following image. You can also use the Search field to locate a value.



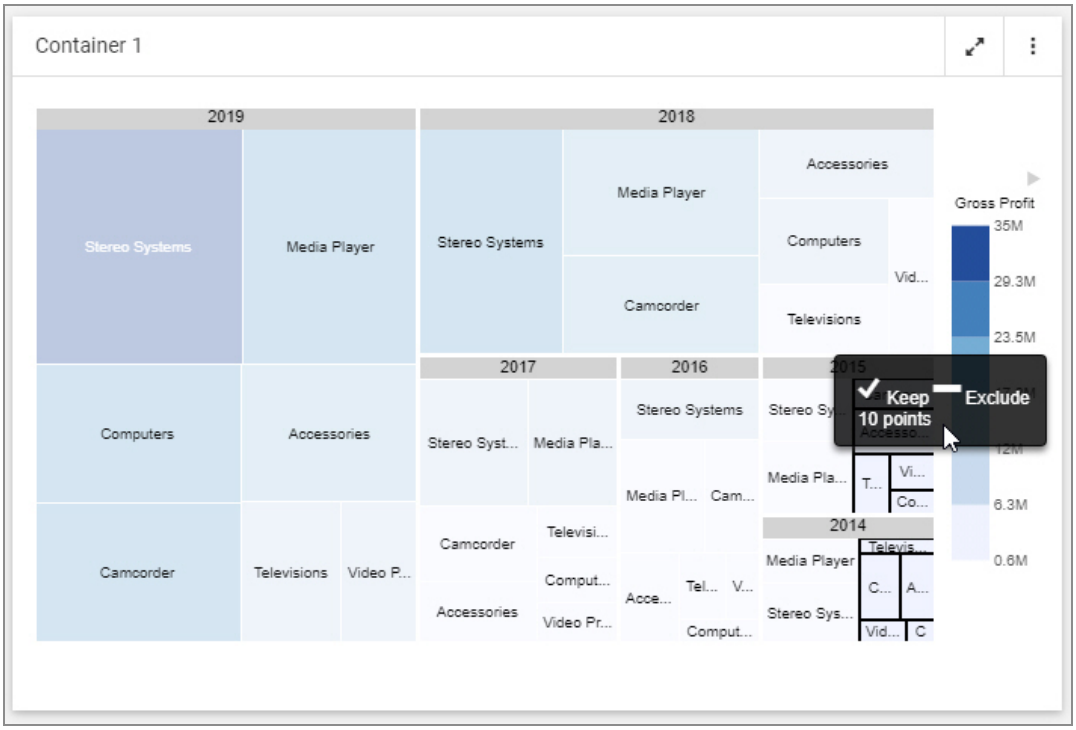
You can right-click a filter control for existing content on a page to access formatting options. For example, you can convert a list control to radio buttons, checkboxes, or a button pane, merge two related controls, and access configuration and format options on the Properties panel. For more information, see Styling Filter Controls in a Visualization.

Filtering a Chart with Visual Selections

You can visually create prompted filters by selecting areas of a chart directly from the canvas as you create it, as well as at run-time. This is called on-chart filtering. Since on-chart filtering is performed based on visual selections on a chart, they are quick and intuitive to create. On-chart filters created from one item immediately affect all other content created on the page, allowing you to see the impact of your filter immediately. On-chart filtering is available from pages containing one or more new content items, and from stand-alone charts created using the AHTML output format.

On-chart filtering is enabled in applicable content types by default. To disable on-chart filtering, open the **Filter options** menu and deselect **Use content as filters**.

To use on-chart filtering, select one or more areas of a chart by clicking a single section or by clicking and dragging, or lassoing, an area of the chart. The selected sections of the chart are highlighted, and a tooltip appears with information about the selected area, as shown in the following image.



From the tooltip, you can filter the entire visualization for the data that you selected in the chart. Click **Keep** to create a prompted filter for the selected values, or click **Exclude** to create a filter that excludes the selected values.

You can create several filters using on-chart filtering to further refine the data that you display in the visualization. Each of these filters affects every item on the page. When a

filter is created, it is added to the Filter toolbar. If the filter applies to a single dimension, you can click the filter label in the toolbar to edit it. If the filter is applied to multiple dimensions, such as a bar chart with one dimension in the Horizontal bucket and another dimension in the Color bucket, then the filter is not editable from the Filter toolbar. However, you can point to it to see a tooltip listing the filter selections, as shown in the following image.

You can right-click the filter label at design time to delete the on-chart filter or swap between keeping and excluding the selected values. You can also delete a filter created with on chart filtering by selecting an area of the chart and clicking **Remove Filter** on the tooltip, or by clicking the **X** on the filter control in the Filter toolbar. The visualization restores the values previously hidden by the on-chart filter.

On-chart filtering works similarly at run time. When you run a page created with new content, you can click or lasso different areas of a chart to dynamically filter the entire page.

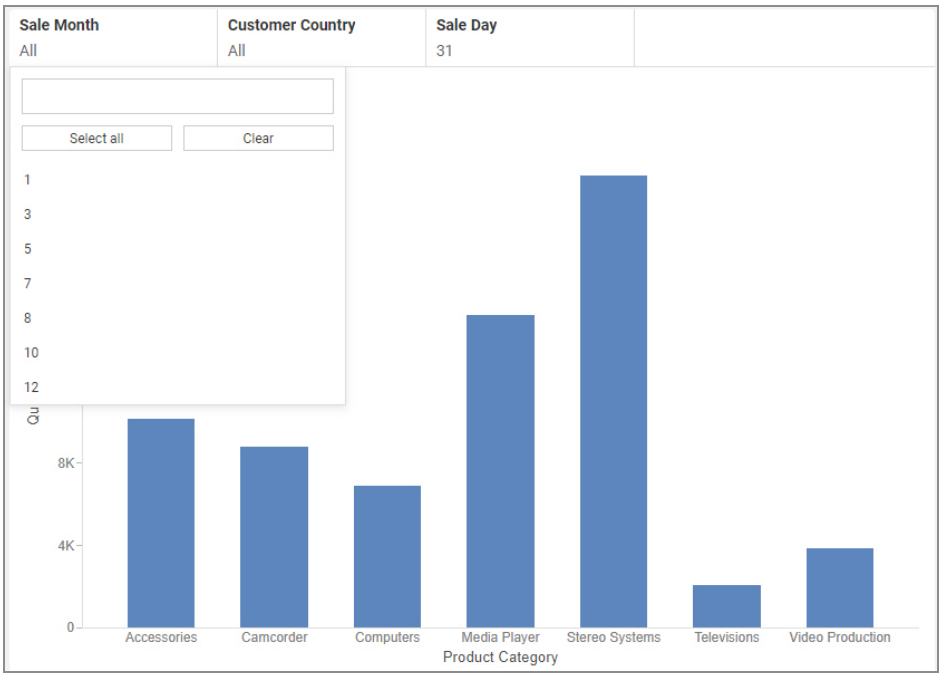
Chaining Filter Control Selections

When a content item or page includes multiple filters, chaining ensures that those filters always return valid values to your content. When you select a value from one of the filter controls, the other controls can be filtered and updated based on the value that you select, if chaining is applied. For example, if you have a filter for Sale Quarter chained to a filter

for Sale Month, then when you select Q1 from the Sale Quarter filter, the Sale Month filter updates to show only the months of January, February, and March, and automatically excludes any month values that were not in Q1.

Two different chaining behaviors are available: multidirectional and hierarchical. When multiple prompted filters for alphanumeric dimension fields are created in a visualization created with new content, they are chained multidirectionally, by default. This means that the selection from one prompted filter control automatically filters and updates the available values in all other controls for alphanumeric fields, so they only display relevant values. This ensures that users cannot select filter values that result in no data displayed in the visualization, regardless of the order and arrangement of the filter controls. To select a value that has been hidden because of chaining, clear any other filters that may have resulted in the value being unavailable. Note that on-chart filtering also affects the available filter values when multidirectional chaining is enabled.

For example, the following image shows a chart with multidirectional filter chaining enabled. Notice that, since the filter for Sale Day was set to **31**, only months with 31 days are shown in the dropdown list for Sale Month.



If you make selections in one filter control, and then make selections in another chained filter control that make some of the original values unavailable, those originally selected values are restored when the other filters are cleared. For example, if you set the Sale Month filter to **September** and **December**, and then set the Sale Day to **31**, September is no longer visible in the Sale Month control, since it only has 30 days. Only December is

selected. When you clear the Sale Day control, both September and December are selected once again in the Sale Month control.

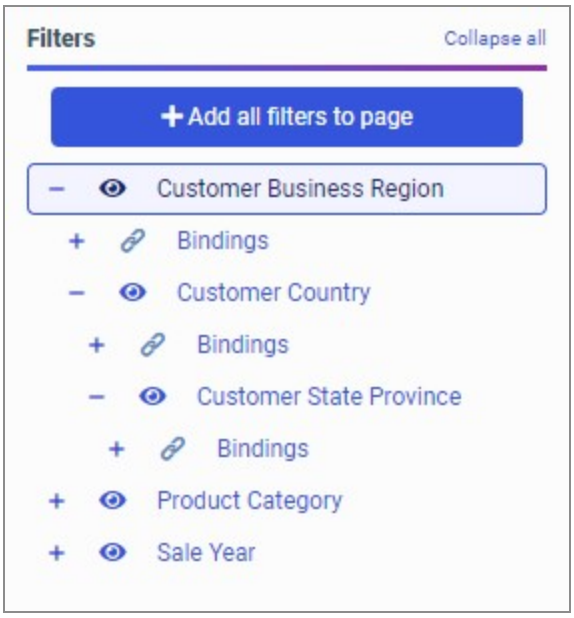
Full multidirectional chaining is only applied to list controls. Calendar and slider controls are not chained. While slider controls and preset ranges in calendar controls update to reflect the current range of data, similar to chaining, the values selected using a slider or calendar do not affect the other controls.

You can change the chaining setting for filters in the page to hierarchical chaining or no chaining by clicking the **Filter options** menu and selecting **Link hierarchies** or **Do not link filters**, respectively. The option to change chaining behavior is only applicable to stand-alone content or content created within a visualization.

Hierarchical chaining is based on drill levels in your metadata. When you select a filter value, chaining is applied to fields that are lower in the same filter hierarchy. Filter controls for fields that are higher in the same hierarchy are not affected by filter selections when using hierarchical chaining, nor are filter controls for fields that are not in the same hierarchy.

Hierarchical chaining is the default behavior for filter controls that are added to a page from external content. When external content is added to a visualization, hierarchical chaining is applied automatically to any content with WHERE filters using a WITHIN phrase. WebFOCUS Designer automatically adds the WITHIN phrase to filters from the same metadata hierarchy, so hierarchical chaining is enabled for content items created in WebFOCUS Designer by default when they are added to a page as external content.

When assembling a page from existing content, you can manually apply hierarchical chaining relationships to filter controls from the Filters tab on the sidebar, even if those fields are not part of the same metadata hierarchy. The Filters tab shows a list of all parameters in your assembled page. The order of this list does not impact filtering behavior, but the parameter list does indicate chaining hierarchies, which display as values indented below their parent value. Drag a parameter in the list on the Filters tab onto another parameter to make it a child of that filter control. You can create a multi-level chaining hierarchy so that selections from one filter apply chaining to a second filter, and selections from the second filter apply chaining to a third filter. The following image shows the parameter list with a selection of filters that have been added to a page assembled from existing content.



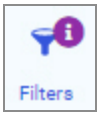
In this example, the filter selections in the Customer Business Region filter are chained to the Customer Country and Customer State Province fields, so if you select North America as the business region, then only countries and provinces in North America will be available from the other respective filter controls. Since hierarchical chaining is unidirectional, if you select a country for the Customer Country filter, the Customer Business Region is not affected, so you could still select a business region other than the one that contains the previously selected country.

Filters from multiple data sources used for content in an assembled page can be chained together, although if the field name and values of parent filters do not exist in the data source used for the child filter, chaining will not work properly. To unchain a parameter, drag it into the empty space between the **Add all filters to page** button and the top parameter in the list. The parameter is removed from the chaining hierarchy and moved to the bottom of the list.

Applying Prompted Filters From External Content

Importing a filter from external content in WebFOCUS Designer is a quick and intuitive process. Additionally, parameter filters added to a page from existing content can be rearranged and styled with options unavailable to filters created for new content in a page.

Whenever you add a parameterized content item to the canvas, such as a chart or report that uses a prompted filter or dynamic parameter, the parameters are recognized and you can create filters for them automatically. A badge count is overlaid on the Filters tab on the sidebar, as shown in the following image.



The Filters tab provides options to add filters to your page and apply chaining to them. Open the Filters tab and then click **Add all filters to page** to create filters for all identified parameters. Alternatively, right-click a parameter in the list to create a single filter control. Each filter in the list on the Filters tab displays the filter name and, under Bindings, the data source and target items associated with the filter. Available filter values are pulled from the data source, and the selected values are passed to the target items. Chaining is indicated by tabbed hierarchies on the Filters tab, and can be applied manually by dragging one filter onto another in the list. To unchain a single filter from a hierarchy, right-click a child filter and click **Unchain filter from parent**. To unchain all filters in a hierarchy, right-click the parent filter and click **Unchain all child filters**.

The ellipses menu in the upper-right corner of the Filters tab of the sidebar provides access to the following options:

- **Expand all.** Expands all nodes of the filters tree, showing metadata and bindings hierarchies.
- **Collapse all.** Collapses all nodes of the filters tree, only showing the titles of the available filters.
- **Show bindings details.** Displays the bindings details and hierarchies.
- **Show unused filters.** Displays all filters, including those that are not added to the page.

  Note: When this setting is disabled, the unused filters are hidden and their count is displayed below the filter tree.

- **View/Edit filter defaults.** Opens the Page Defaults dialog where you can configure default settings on the page level.

  Note: To learn more about page defaults, see Customizing Assembled Page Defaults.

After you add filters from external content to a page, you can right-click a filter control to access formatting options. For example, you can convert a list control to radio buttons, checkboxes, or a button pane, merge two related controls, and access configuration and format options on the Properties panel.

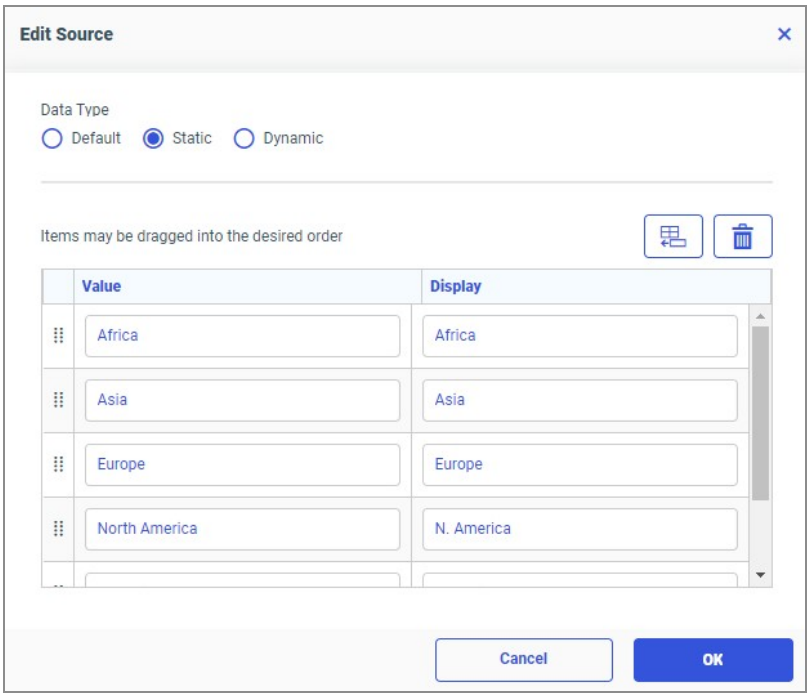
If a filter is configured to exclude selected values, the not equal icon is added to its label to indicate that all your selections will be excluded.

As an alternative to using the Filter toolbar, or in addition to it, you can add a grid container to a page either by dragging it from the Resources panel when you select the Container tab on the sidebar, or simply by dragging a filter onto the canvas where a grid container will be automatically created to accommodate it. A grid container includes multiple cells into which filter controls can be placed. You can also move the original filter toolbar or have it display in a modal window by selecting the entire page and then clicking one of the filter location options on the Settings tab of the Properties panel.

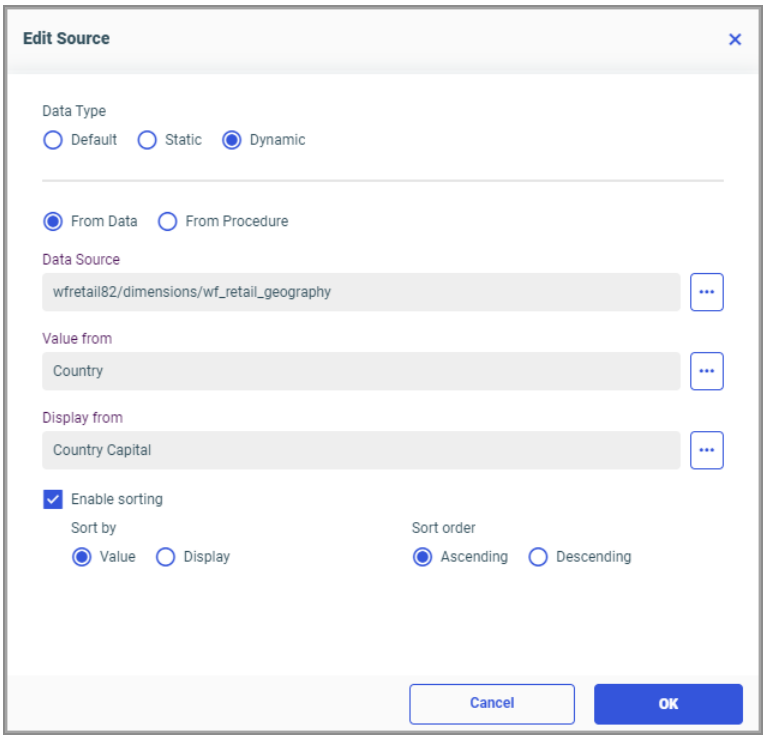
You can interact with the filter controls in an assembled page at design time to see how different filter selections affect your content. However, these filter selections are not retained at runtime. To change the default value for a filter in an assembled page, select the filter and, on the Settings tab, in the Data Settings section, type a value into the Default value text box.

You can also change the values that are available from the filter control. As an alternative to the values that are automatically brought in from the field that the filter is associated with, you can manually add values to the control as a static list, or import all values from an external data source as a dynamic list. Once you add controls to the page, select a control and, on the Settings tab of the Properties panel, in the Bindings section, click the pencil icon next to the Source box. The Edit Source dialog opens.

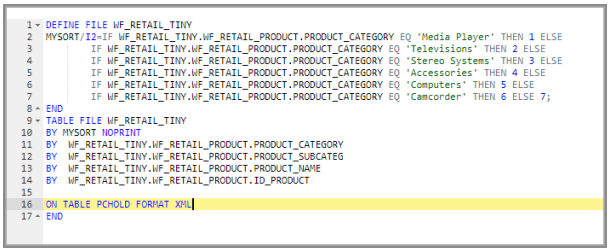
In the Edit Source dialog, leave **Default** selected to automatically pull all relevant values from the data source. Select **Static** and then click **Add Row** to add a new value. You can type the literal value that is passed to the filtered content in the Value column, and the text that displays in the filter control to represent that value in the Display column. You can add multiple items, reorder them, and delete them as needed. The static list options in the Edit Source dialog are shown in the following image.



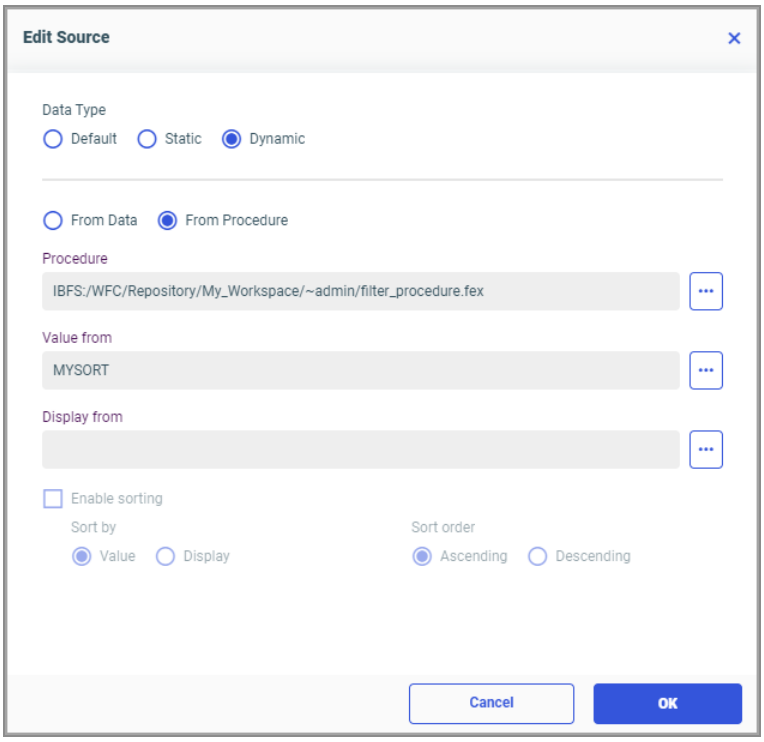
If you select **Dynamic**, you are presented with the choice of two options: From Data and From Procedure. If you select the **From Data** option, you can choose a synonym available in your environment, and then select the fields from that synonym that should provide the actual and display values for the filter. Optionally, you can enable sorting for your filter either by the actual or display value as well as configure the sorting order. The options to populate a filter with values from fields in a data source are shown in the following image.



If you select the **From Procedure** option, you can bind your filter to an existing content item in your repository. Keep in mind that this item must be converted to an XML format in Text Editor, as shown in the highlighted section of the following image.

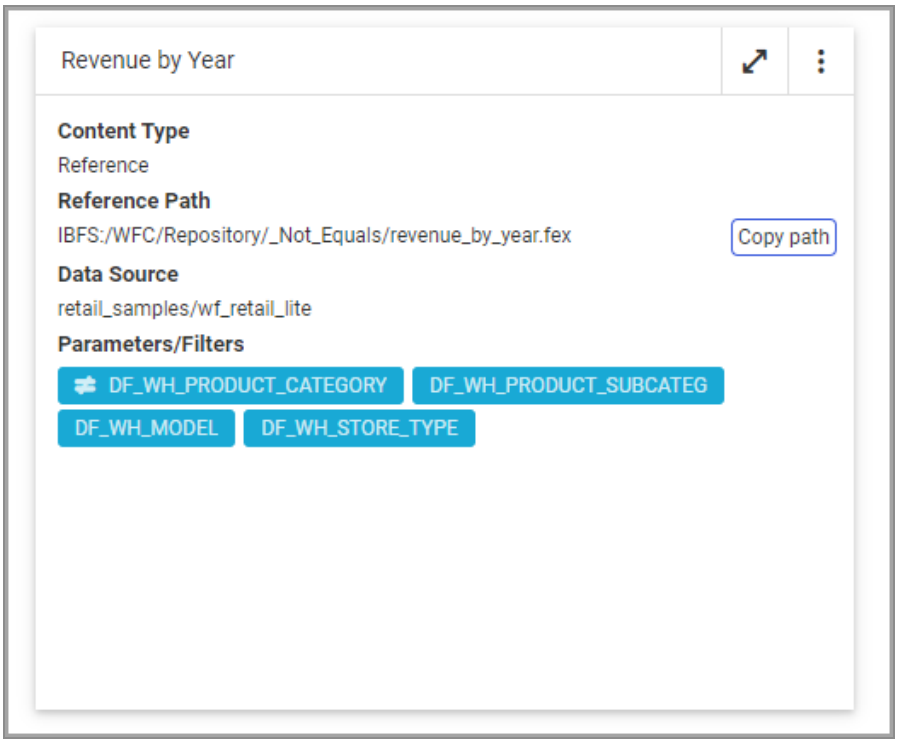


Select your previously created and modified item in the **Procedure** field, then select fields from this item that should provide the actual and display values for the filter. The sorting options are disabled here to preserve the sort order defined by the selected procedure. An example of the options to populate a filter with values from fields in a procedure is shown in the following image.



Note: You can leave the **Display from** field empty, if the display value is the same as the actual value. If left empty, the **Display from** field automatically reflects the **Value from** field setting.

To see which filters apply to which external content items, in addition to the binding information on the Filters tab, click **Info** on the Visualization toolbar. Each content item on the page lists the parameters by which it is filtered. The chart displayed in the following image is affected by filters for six fields, listed under Parameters/Filters. The not equal icon indicates the filter that is configured to exclude the selected values.



Add Filters From Existing Content to a Page

When you bring existing, parameterized content into a page, you are prompted to create filter controls for each parameter. Once created, these controls can be modified with a set of additional options that are not available when creating new content items.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub or the WebFOCUS Home Page, click the plus button and then click **Assemble Visualizations**.

   WebFOCUS Designer opens in a new browser tab.

2. In WebFOCUS Designer, select a template for the page. You can use a predefined template, or select **Blank** to build the page from scratch.

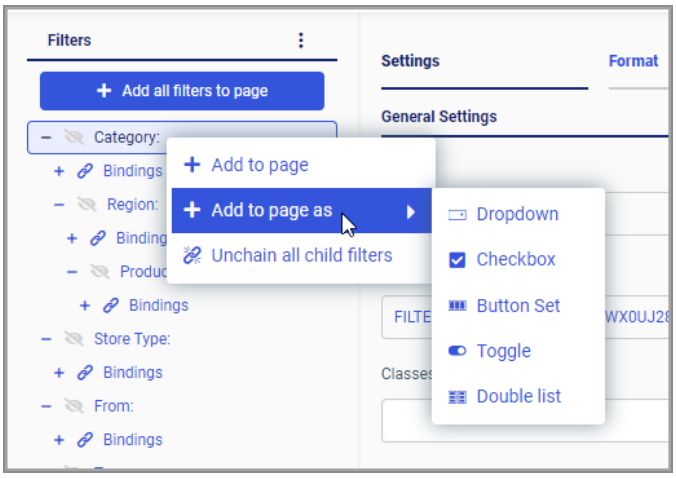
3. With the Content tab selected on the sidebar, drag a parameterized item of your choice from the Resources tree to the canvas.

   A badge appears on the Filters tab icon on the sidebar, indicating that there are unbound filters.

4. Optionally, add more content.

> **Note:**
> The quickest way to create stand-alone content featuring the same set of parameters is to start by creating a Reporting Object with desired parameters, and then using the Reporting Object to create content. To do so, on the WebFOCUS Hub, click the plus menu and click **Create Visualizations**, or on the WebFOCUS Home Page, click **Visualize Data**. When WebFOCUS Designer opens, select a Reporting Object as your data source.

5. Click the **Filters** tab on the sidebar. Click **Add all filters to page** to create controls for all listed parameters, or right-click each parameter for which you want to create a filter control, and click **Add to page**. If you know the type of control that you want to designate to your individual filter, right-click this filter, point to **Add to page as**, and select a control, as shown in the following image.



Additionally, you can multi-select filters in the Filters tab by holding the Ctrl or Shift key, right-clicking them, and then clicking **Add to page**. You can also drag them onto the canvas to create a grid container.

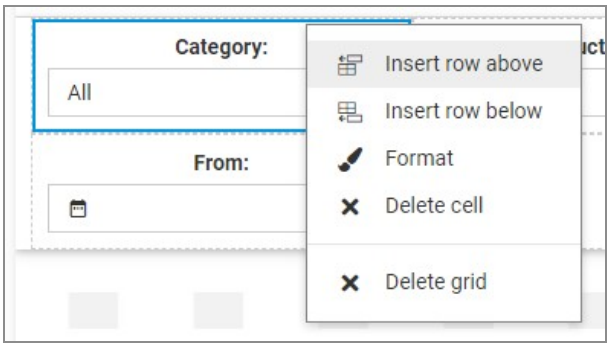
Once the filters are added, the filter bar appears above your content with the controls that you chose to create.

6. Optionally, customize your filter bar as described below.

   - Change the location of the filter bar from below the page toolbar to above it, to

the left side of the page, or into a modal window. Select the entire page and, in the Properties panel, on the Settings tab, select **Below Header**, **Above Header**, **Left Position**, or **Modal**.

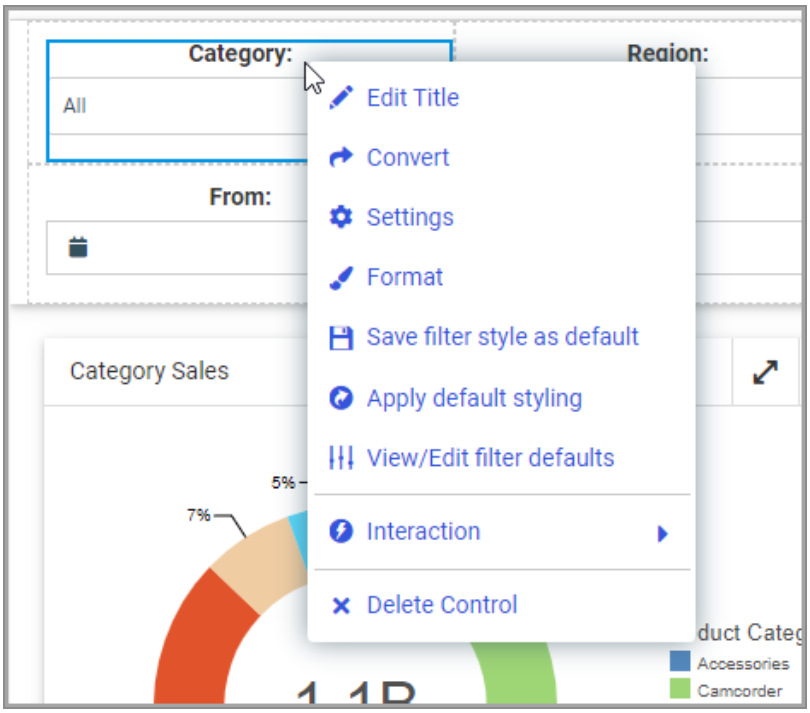
- Move filter controls to a filter grid. When assembling a page from existing content, you can create a filter grid by dragging a grid container from the Resources panel with the Container tab selected. You can then resize and reposition the filter grid to customize where the filter controls should display on your page.
- Right-click a cell to access shortcut menu options, as shown in the following image.



To right-click a cell, right-click the margin above or to the left of a filter control.

The available options are:

  - **Insert row above.** Inserts an empty row above the current row in the filter grid.
  - **Insert row below.** Inserts an empty row below the current row in the filter grid.
  - **Format.** Opens the Properties panel to the Format tab, where you can customize the grid style and cell alignment.
  - **Delete cell.** Deletes the current cell.
  - **Delete grid.** Deletes the entire filter bar.
- Right-click a control to access shortcut menu options, as shown in the following image.



The available options are:

- **Edit Title.** Selects the label text for editing.

  > **Note:** Another way to edit a control label is to double-click the filter label, type the new text, and press the Enter key.

- **Convert.** Opens the Convert Control To dialog, where you can choose between various control types.

  You can convert a list control, created for alphanumeric fields, to radio buttons if single-select, check boxes if multiselect, or a button panel. You can convert a single-headed slider, created for single-select numeric fields, to an input box.

- **Settings.** Opens the Settings tab of the Properties panel, where you can customize control configuration options.

- **Format.** Opens the Format tab of the Properties panel, where you can customize control styling options.

- **Save filter style as default.** Saves the style of this filter as default on the page level.
- **Apply default styling.** Applies previously created default styling to the filter.
- **View/Edit filter defaults.** Opens the Page Defaults dialog where you can configure your defaults on the page level.

  Note: To learn more about page defaults, see Customizing Assembled Page Defaults.

- **Interaction.** Allows you to add an interaction for this filter.

  Note: To learn more about interactions, see Working With Interactions.

- **Delete Control.** Removes the filter control from the visualization.

- Drag any filter cell to a new location in the grid to reposition or reorder the filter controls.
- Multi-select two related controls, right-click one of them, and then click **Combine** to combine the two controls into one. An example of two combined controls is shown in the following image.

  The Combine option only applies to single-select date and numeric slider controls. They can be combined into a single control with a start and end point.

- Drag a control into a cell with other controls. This action puts two separate controls into one cell. The drag marker is shown allowing you to position one control in front or behind another control. You can separate the controls again by dragging one control out of the cell.

7. Save your changes.

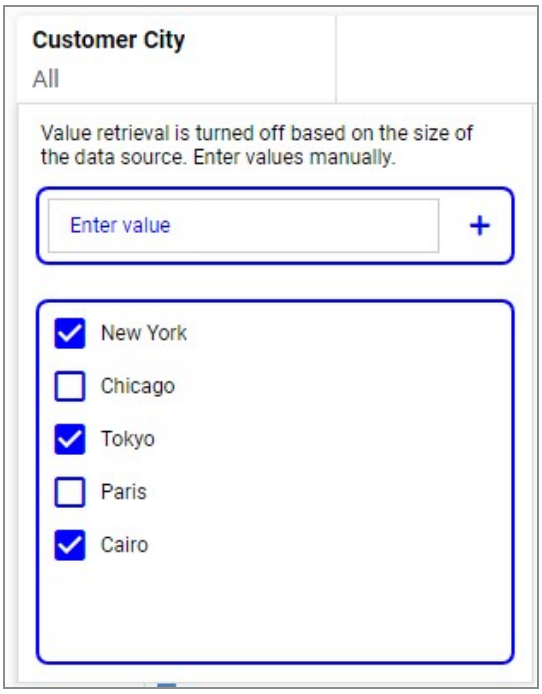
Filtering Large and Streaming Data Sources

By default, the filter controls that you create in WebFOCUS Designer include, or are bounded based on, a list of values from your data source, which allows you to more easily select valid values from these controls. However, when working with large or streaming data sources, it may not be prudent to query the data source to retrieve this list, as a large number of values may exceed the maximum that can display in the filter control, or cause performance issues, while values from streaming data sources may change rapidly.

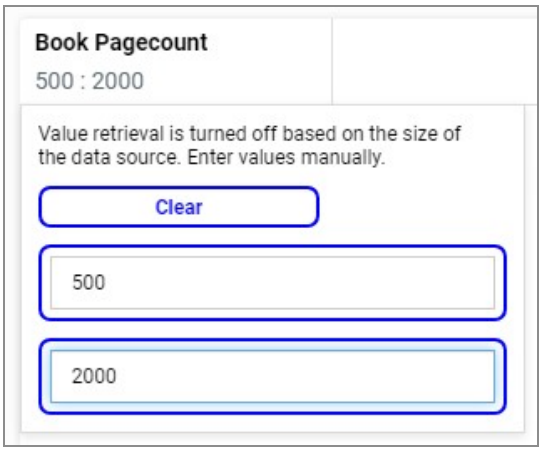
As an alternative, when creating a single chart or report, or a page with new content, you can provide dataless filters for specified segments in a data source, in order to conserve the resources needed to perform data retrieval. This filtering behavior is also applied at run time in pages created with new content. Filtering behavior in autoprompt and in pages assembled from existing content is not affected.

Once dataless filter controls are enabled for a segment in a data source, when you create a filter using a field from that segment, a predefined list or range of values is no longer provided in the filter control. For alphanumeric and numeric fields, the filter control is an edit box into which you can type your own values. In the case of alphanumeric fields, you can type multiple values, while for numeric fields, you type the start and end point for a range of values. For date fields, the filter is a calendar control in which only the previous week is selected by default. You should therefore be familiar enough with the data source to provide valid filter values.

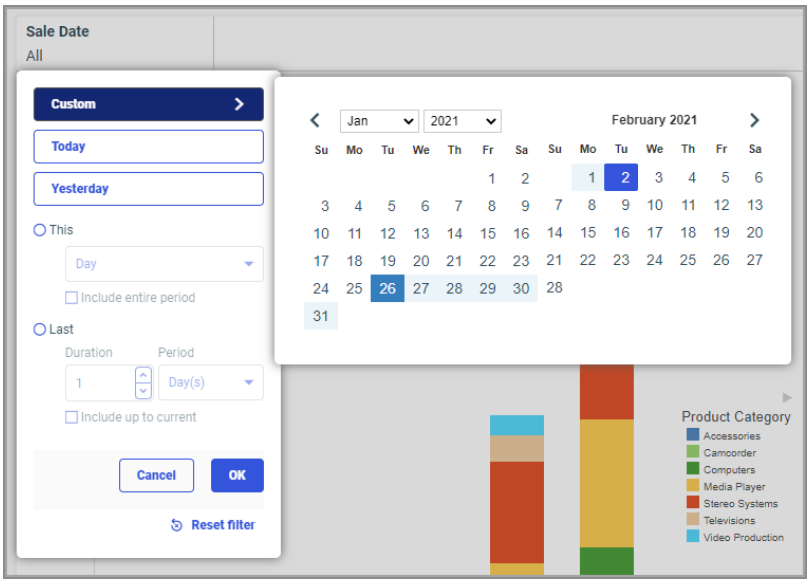
The dataless edit box filter control used for alphanumeric fields is shown in the following image.



The dataless edit box filter control used to set a range of values for a numeric field is shown in the following image.



The dataless calendar control is shown in the following image. Notice that the same preset date options and calendar selection options are available as when data retrieval is performed. Only the default custom date range is affected.



Dataless filter controls are activated for a segment in a data source by adding a property to the Access File of the synonym. Add the setting DATASIZE=INFINITE to turn on dataless filtering for a segment. This segment can represent an entire data source or a single table within a larger data structure, meaning that you can turn on dataless filtering for fields in individual segments that you want to filter without retrieving data values. Set the DATASIZE property to INFINITE in the Access File, as shown in the following syntax example.

```
SEGNAME=segment,
   DATASIZE=INFINITE,
   TABLENAME=table, $
```

where:

segment

Is the name of a segment whose fields you want to filter without data retrieval. The segment must be defined in the Master File with which the Access File is associated in the synonym. This allows you to configure dataless filtering for a selected set of fields.

table

Is the name of the original data source that the synonym whose Access File you are editing represents. This may be a flat file, a table in a database, or another collection of data records.

For more information about setting properties for metadata, see the *Describing Data With WebFOCUS Language* technical content.

Once enabled, filters created for fields from the specified segment are set by manually supplying filter values. Prompted filters for alphanumeric fields can be applied by typing the filter values into a text box. You can enter multiple values, and deselect previously entered values that you no longer want to use by clearing the check boxes in the list of values. Filter values that are deselected at design time do not appear at run time. You can determine whether selected filter values should be applied or excluded by right-clicking the control and selecting **Include** or **Exclude**.

Prompted filters for numeric fields also allow you to type in filter values. By default, numeric filters are applied as a range, bounded by a maximum and minimum. Therefore, two edit boxes are provided into which you can type a minimum and maximum value. If you change the filter to use an open-ended range that is greater than or less than a specified value, only a single edit box is provided in the filter control.

Prompted filters for date fields allow you to select a preset date range relative to the current date, or set a custom date range. The custom date range defaults to the past week, but can be set to any range of dates. By default, you set date filters to using a range with a fixed start and end point, but you can change it to an open-ended range that begins or ends on the selected date, by right-clicking the filter control and selecting a new filter relationship.

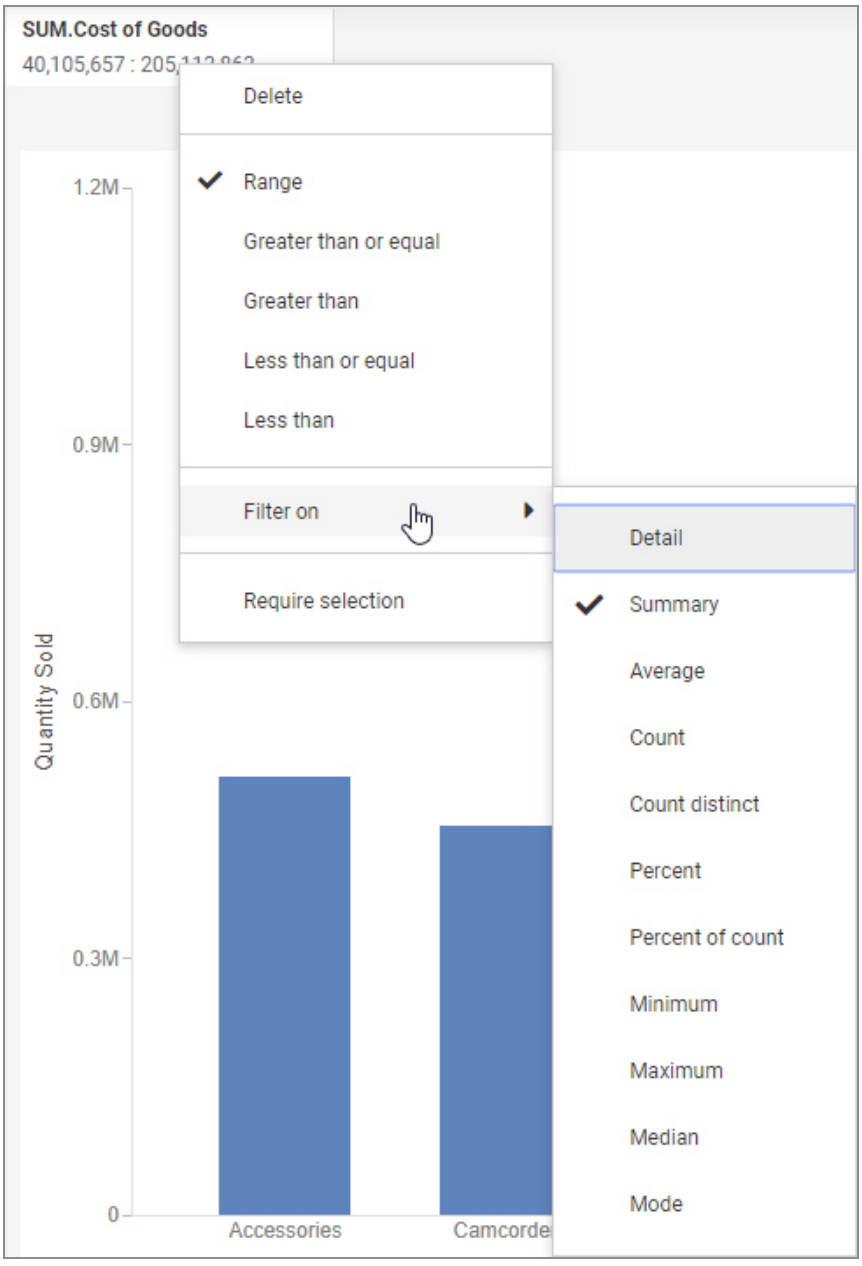
Static filters include a similar set of options when creating filters without referencing the data source. For all field types, the Select from data option is unavailable. For alphanumeric fields, this leaves the Select from file, Enter manually, and Wild card options, which allow the user to provide their own values. For date fields, this leaves the Select ranges, Select from file, and Enter manually options. The default date range for the Select ranges option is initially set to the current date, but you can set the start and end of the date range to any date, as needed. For numeric fields, this leaves the Select ranges, Select from file, and Enter manually options. When providing a range of values, the slider is removed, and you can provide start and end points for the range by typing a value into an edit box. The ability to create a filter by comparing two fields is unaffected.

Summarizing Numeric Data Using Filters

When you create a filter for a measure field in new content, you can choose to filter by aggregated values, using a Summary filter, or by individual records, using a Detail filter.

This enables you to review data from a high level or based on a more granular view.

To specify one of these options in a new prompted filter, when you place a measure on the Filter toolbar, right-click it and point to **Filter on** to access the Detail and aggregated filter options, which are shown in the following image.

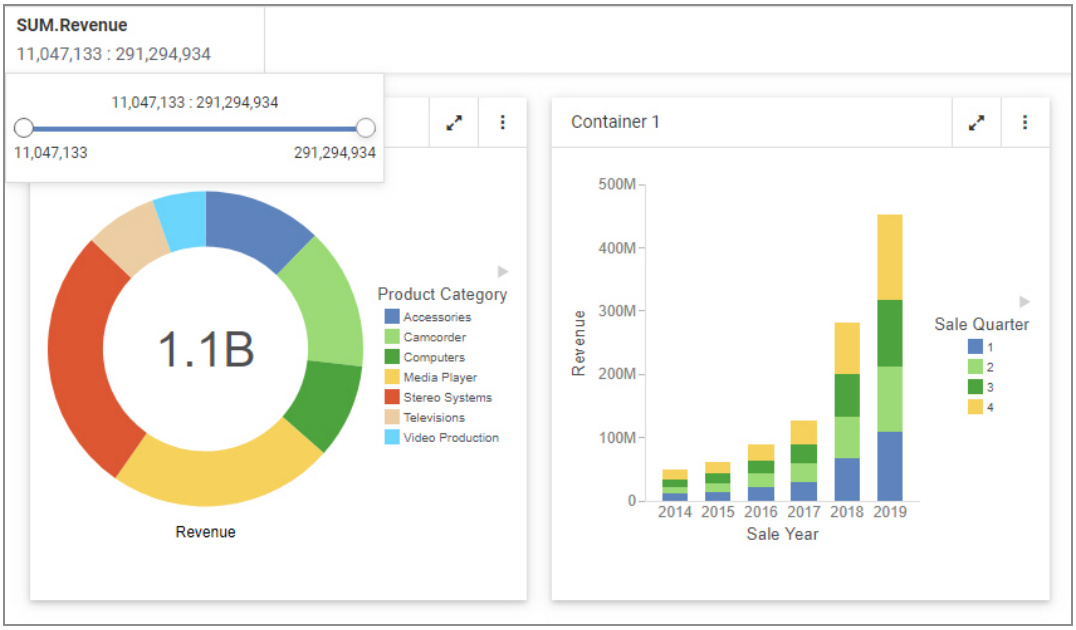


To choose between detail and aggregated filter options when creating a static filter, drag a measure to the Filter bucket and select an option from the Apply aggregation dropdown menu.

Summary filters are indicated by an aggregation prefix operator on the filter control label.

The Summary option, which is the default for measure fields, allows you to select records based on the summed, aggregated value of a field. All values for the chart, report, or page are calculated, and then the aggregated values are filtered based on whether they meet the filter requirements. For example, if you create a chart that shows Revenue sorted into Product Categories, you can use a summary filter to display only the Product Categories that meet the selected filter requirements.

If you create a summary filter in a visualization with multiple content items, the minimum and maximum values available in the filter control are the minimum and maximum values across all combined sort fields in the entire visualization. For example, if you created a chart that was sorted by Product Category, and then added a second chart that was sorted by Sale Year and colored by Sale Quarter, then the values in the summary filter would reflect the range of values for each product category and each combined sale year and Sale Quarter. In the following image, the minimum available value for the summary filter on the Revenue field is 11,047,133, which is the revenue from Q1 2014 in the bar chart on the right. This is the smallest value on the page. The maximum available value, 291,294,934, is the revenue for stereo systems in the pie chart on the left. This is the largest value on the page.

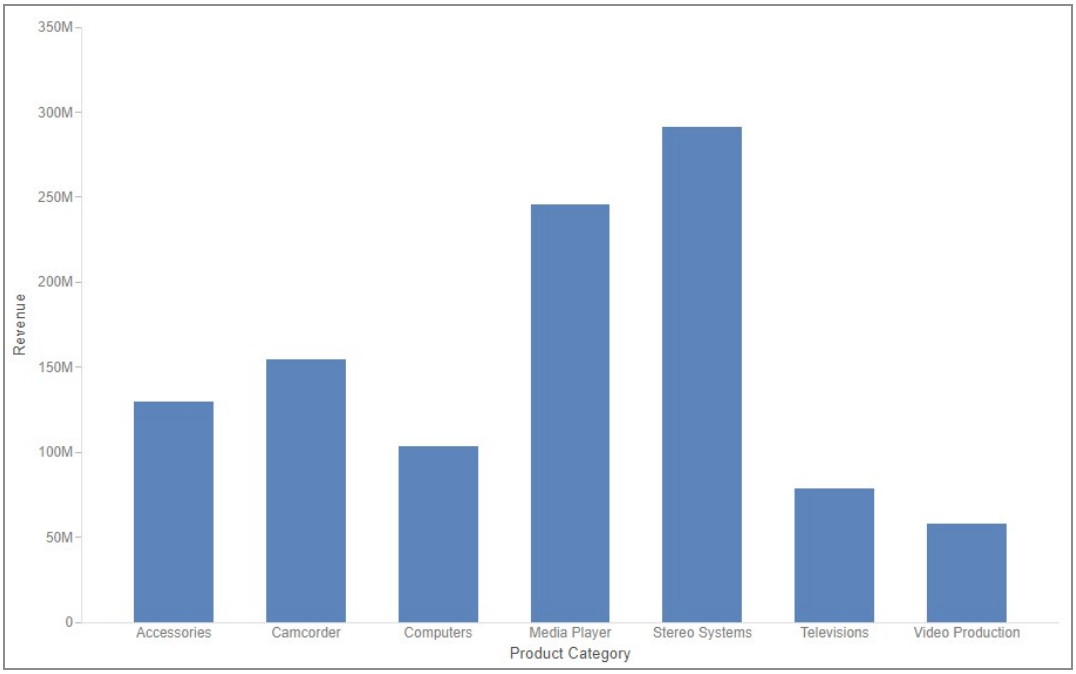


All of the other values in the pie chart and the bar chart on the page fall between these two points. As a result, certain summary filter selections may exclude all values from one chart, but not another.

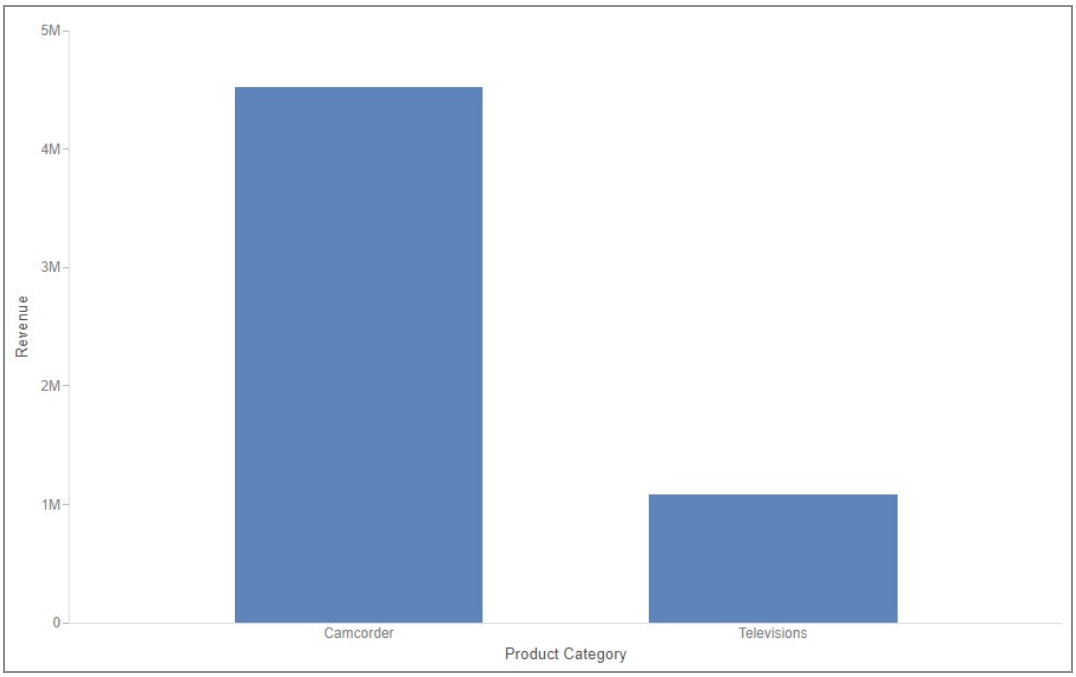
You can also filter using Detail values, which represent each record of your data source. In this case, filtering occurs before the values are calculated for each sort value. If you create a chart that shows Quantity Sold sorted by Product Category and add a Detail filter, the

individual record values from the data source are filtered based on whether they meet the filter requirements, and then sorted into product categories and aggregated to display the quantity sold for each.

Consider the following two charts, each of which uses a filter for Revenue greater than $10,000. The first chart uses a Summary filter, so it is filtered after aggregation. It displays Revenue values for every product category that had over $10,000 in total revenue. Each of the seven product categories met this criterion, and are therefore displayed in the chart, as shown in the following image.

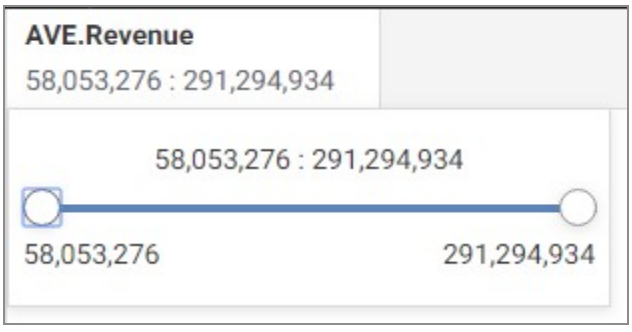


In the second chart, the Summary filter has been changed to a Detail filter where Revenue is greater than $10,000. This filter is applied before data aggregation. Since each record in the data source represents a single sale, the data is filtered for individual sales that earned revenue of over $10,000. Those values are then grouped by Product Category into the chart shown in the following image.



In this case, the only individual sales for more than $10,000 were for camcorders and televisions.

In addition, when working with numeric filters, you can select the type of aggregation to be used in a Summary filter. By default, a Summary filter, created using the Summary option, uses the sum aggregation. You can also apply standard aggregation methods including average, count, count distinct, minimum, and maximum to a Summary filter. Selecting one of these options filters your content for aggregated values matching the specified criteria, indicated by the label on the filter control, as shown in the following image of a filter control using the average aggregation method.



If you create a filter for a field in your chart or report that already uses a prefix operator aggregation, by dragging the field from a bucket to the filter toolbar or by right-clicking it in a bucket and selecting **Add to filter** toolbar, a Summary filter is created with the prefix operator aggregation applied.

If the field with the prefix operator is a dimension field, which can use the count, count distinct, or percent of count prefix operator aggregations, then you can create two filters for the field, one for the non-aggregated dimension field and one for the aggregated version of the field.

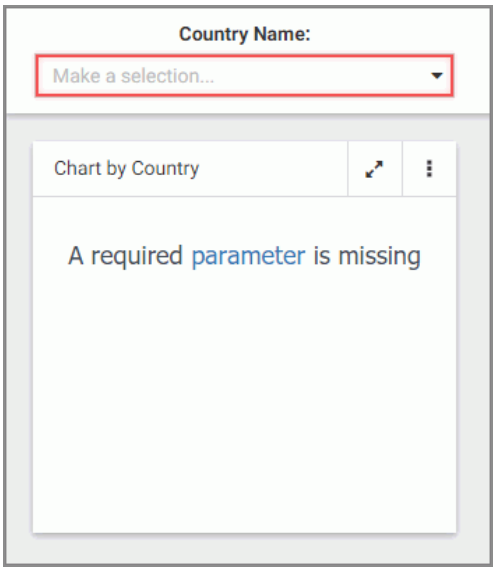
If your request produces a single aggregated value before applying a Summary filter, such as when there are no sort values, the filter control shows a single Summary value instead of providing a range. If you point to the filter value on the Filter toolbar, a tooltip appears that says, *Summary filter irrelevant. Change to Filter on Detail or add a sort field to your request*.

If you create a Summary filter and then changes are made to the request such that the minimum or maximum value on the Summary filter range falls outside the range of values in your data, then that filter value appears in red in the control. If you point to it, a tooltip indicates that it is outside the range of your data. The filter is still valid, but may not be applicable to the current state of your content. Similarly, when creating a static filter, you can type a value that is outside the range of values in your data. In this case, the text box displaying the value is outlined in purple and a message indicates that the value is out of range.

If you create a numeric range in a static filter where the minimum value is greater than the maximum value, the filter is not valid, and you cannot save it. A warning appears alerting you that the start and end points are invalid.

Working With Required Parameters

By default, when you create a prompted filter in WebFOCUS Designer, the filter is optional. You can right-click a new prompted filter and select **Require selection**, or select a prompted filter for existing content and clear the **Optional** checkbox on the Settings tab to make it required. This means that users must select a value at run-time before affected content on the page loads. Required controls from external content are marked in red, prompting you to make a selection for the request to be processed. The image below shows an example of a required filter control.



Convert an Optional Filter Control in an Assembled Page to a Required One

Procedure

1. In WebFOCUS Designer, add filters to a page, as described in Applying Prompted Filters From External Content.
2. Select an optional filter control and open the Settings tab on the Properties panel.

   Be sure to select the filter control itself. If you click just outside the filter control, you will select the cell containing the control, which can also be styled and formatted.
3. In the Control Settings area, clear the **Optional** checkbox to make the control required.

   The filter control is marked in red and the *Make a selection* text displays inside the control field.
4. Optionally, to change the default text from *Make a selection* to a prompt of your choice, change the value of the Placeholder text setting on the Properties panel.

   The default text in the required control changes.
5. If the filter was created for an alphanumeric field, on the Settings tab, in the Data Settings area, disable the **Show All option** setting.

6. Click the **Run in new window** button.

   Your content opens in a new browser tab or window. The content affected by the filter does not initially load. You must select a filter value first.

7. Select a value for the required filter control.

   The content refreshes to reflect your selection.

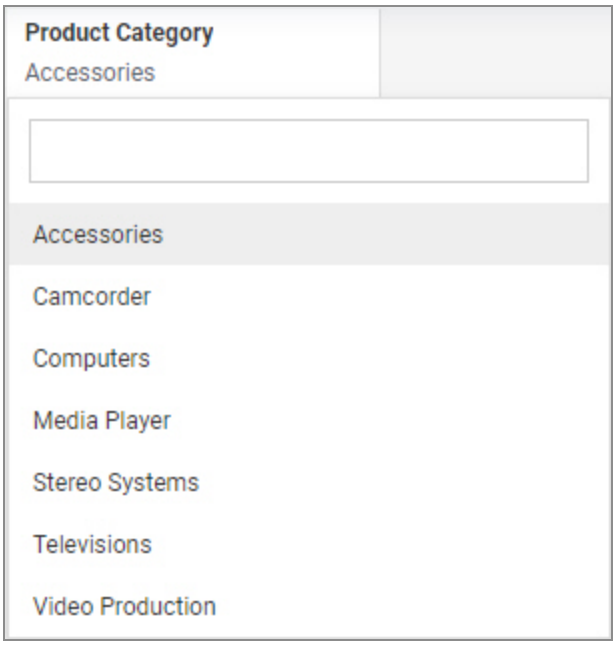
8. Return to WebFOCUS Designer and save your changes.

Working With Single and Multiple Select Lists

In WebFOCUS Designer, list controls are created for alphanumeric fields and numeric dimension fields. There are two types of list controls in WebFOCUS Designer:

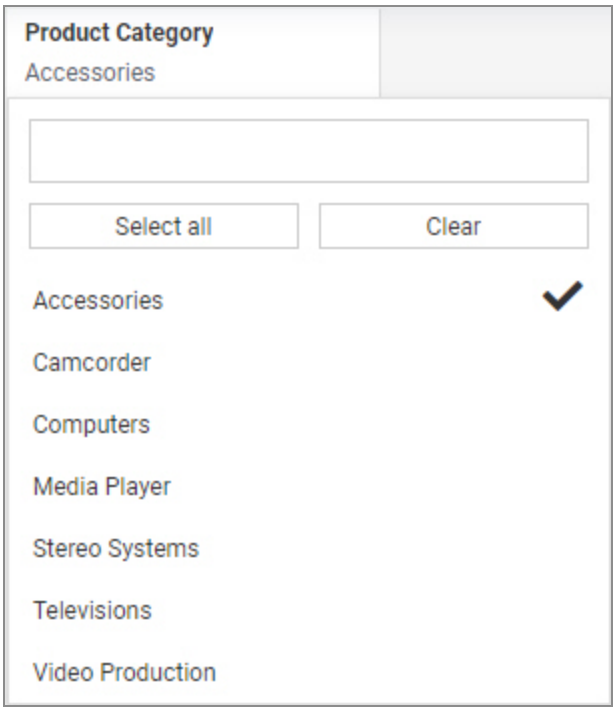
- **Single Select List.** Allows you to pick a single value at run time.
- **Multiple Select List.** Allows you to pick multiple values at run time.

An example of a single select list control is shown in the following image.



Once you have made a selection in a single select list, your content instantly refreshes to reflect that selection.

An example of a multiple select list control is shown in the following image.

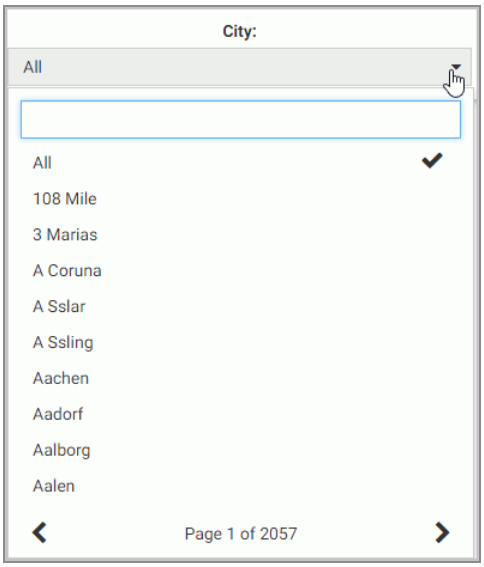


Once you have made all your selections in the multiple select list, you must click outside of the control for the content to refresh.

If the prompted filter was created in a visualization with new content, you can switch between a single and multiple list control by right-clicking the control and selecting **Single** or **Multiple**. If the prompted filter was created for external content, the parameter on which it is based is already defined as single- or multiselect.

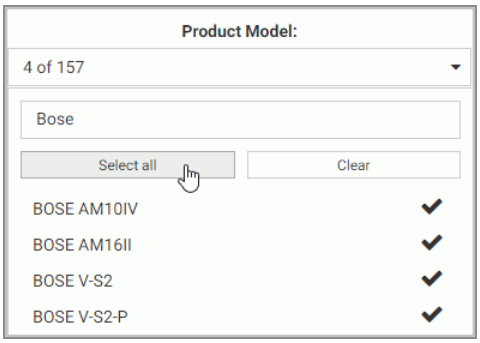
List controls for new content include a search feature to make it easy to select the filter values you want to use. To add or remove the search box for a filter for external content in an assembled page, select or clear the **Search** checkbox on the Settings tab of the Properties panel. Once search is enabled in the control, simply start typing any word or syllable and all values that contain it displays.

If a list contains 200 or more values, the paging feature is added to the bottom of the control. When paging is active, 10 values are display per page. An example of a long list with the paging feature enabled is shown in the following image.



List controls for new content also include the **Select all** and **Clear** buttons. These are especially useful when you need to eliminate just a few values from your results. You can click **Select All**, clear the values that you need to eliminate, and click outside of the control to refresh your content. These can also be added to multiselect list controls for existing content by selecting the **Selection controls** option on the Settings tab.

Once you've typed a search term, you can use the **Select all** button to select all search results, as shown in the following image.



Note that the Select All option selects all values in the control. If the control does not contain all field values, then those values won't be included in the filter. Additionally, the filter selection will not update to include new values added to the data source. To ensure that all values for the selected field are included in the filter, clear the filter selection. *All* displays on the filter control, indicating that all values are used in the filter.

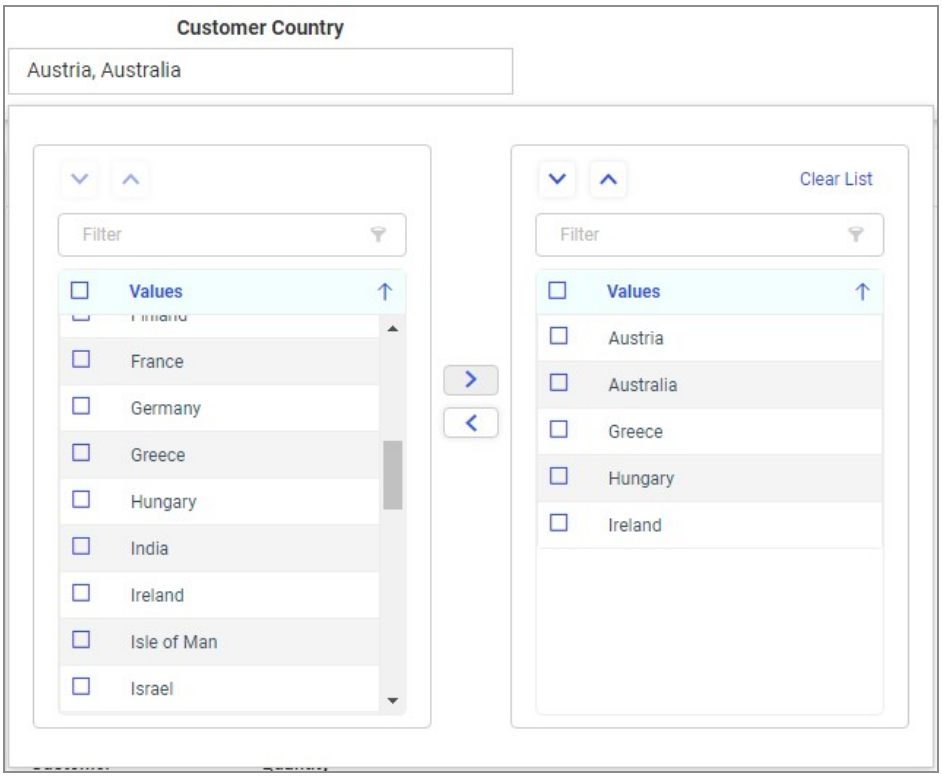
Dropdown list controls in pages assembled from existing content can be converted into different types of controls that offer similar functionality. You can convert a multiselect list to a checkbox control, double list control, or a button set, and you can convert a single-select list to a radio button control or a button set.

Note: In charts, reports, and visualizations with new content, dropdown list controls and slider controls using the Detail option have a record limit of 5000 values. Values beyond this limit are not available for selection in the filter control. There is no record limit for filters in visualizations assembled from existing content, calendar controls, or slider controls using a summary aggregation.

Working With Double List Controls

Another common type of control for alphanumeric fields is a double list control. You can select items in the full list of values on the left, and add them to the list of selected values on the right. The double list control also includes the option to reorder the selected values. This can be especially useful when using multi-select field list parameters in an InfoApp, allowing you to change the order of sort and measure fields in the parameterized content. The only other type of control that includes this reordering behavior is the checkbox control when you select the **Allow reordering** option. The double list control is available only for alphanumeric, multi-select parameter filters.

Double list controls can be added to pages assembled from existing content. To add a double list control to your page, add an external chart or report that is filtered by an alphanumeric, multi-select parameter, and add the default dropdown list control to the Filter toolbar or a grid container. Right-click the control, click **Convert**, and then select **Double List**. A text box that displays the default filter value or values appears in the filter grid. Click the text box to open the double list control, as shown in the following image.



To apply filter values, first select the values in the list on the left that you want to use by selecting the checkbox for each one. Selected values in the list are shown as checked. Select the checkbox for a selected value again to deselect it. You can select multiple consecutive values by holding the Shift key and clicking the checkbox for two values. You can select all available values by clicking the checkbox in the list header, and deselect all values by clicking it again. When more than 50 values are present in the list, it is divided into multiple pages of 25 values each. To navigate to a specific value, filter the list by typing a text string into the search bar. When you have selected the values that you want to use in the filter, click the right arrow button to move them to the list of applied filter values on the right. You can also double-click a single value to move it from one list to the other. Click outside of the double list control to apply the filter selection.

You can reorder the applied values by using the up and down arrow buttons in the control, or by dragging an item up or down within the list on the right. When the double list filter control is used in a multi-select field list parameter, this allows you to change the order in which user-selected fields appear in dynamic content. For example, you can use the double list control with a multi-select field list parameter to swap the primary and secondary sort fields in a report, placing focus on different values. To create a multi-select field list parameter, click **Add Parameter Field List** in the Filters area of the Settings tab, and then, in the Add Parameter Field List dialog, set the Control type to **Single select**. For more information, see Enabling Field Selection at Run Time With Field List Parameters.

To remove one of the applied filter values, open the double list control and double-click a value in the list on the right, or select the values in the list on the right and click the left arrow button . You can also click **Clear List** to immediately remove all applied filter values.

Working With Toggle Controls

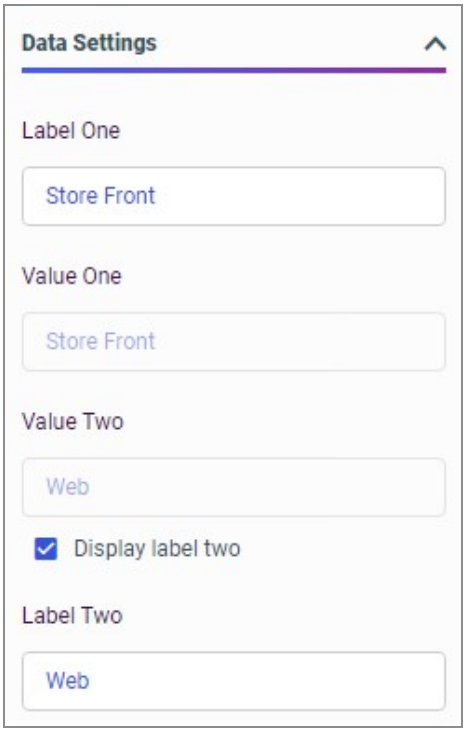
In some cases, instead of having a list of several possible filter values, you may want to create a filter in which only two values are available. Sometimes, this will be a Boolean expression, in which a pre-defined flag can be set to true or false. At other times, you may have a field that has only two available values, and you may want only one or the other to be available at a given time. In each of these cases, a toggle control can be a straightforward way to present these filters. The toggle control is available in pages assembled from existing content items. A toggle control is shown in the following image.

To create a toggle control, add a parameterized chart or report to an assembled page, generate filter controls for it, and convert one of those controls from a dropdown list to a toggle control by right-clicking the control and clicking **Convert**. The first two highest-sorted, unique values in the filtered field are added to the toggle control automatically. Only filter controls for alphanumeric fields can be converted into toggle controls.

Toggle controls are most useful for single-select parameters with only two available values, such as filters for flag columns that indicate whether a condition is true or false. However, toggle controls can be created for fields with more than two values, as well. In this case, the first two unique values in the data source are used by default. If only one unique value is present in the field, then that value and an All value are available for selection using the toggle control, by default. If there are no available values in the selected field, then an All value is used for both sides of the toggle control. The first value in the toggle control is selected when the page loads. At run-time, click the toggle slider to select the second value, and click it again to switch back to the first value.

You can set the two values that are available from the toggle control by selecting it and then using the options in the Control Settings area of the Settings tab. You can set whether the toggle control displays one or two values, and you can set the display and actual

values available in the toggle control. The Data Settings area when a toggle control is selected is shown in the following image.



The display value is the value that appears in the control itself, while the actual value is the value that is actually applied when a filter value is selected. To change the display values, change the text in the Label One and Label Two fields. To change the actual values, change the text in the Value One and Value Two fields. If you change the actual values, make sure that they match the values in the filtered data source exactly. Otherwise, the filtered content may not return any values when the filter is applied.

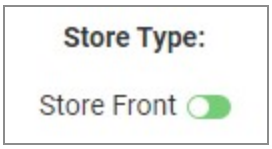
To display only the first value, which reduces the amount of horizontal space needed by the toggle control, clear the **Display label two** checkbox. In this case, when the toggle slider is switched off of the first value, the non-displayed second value is selected. Therefore, it may be best to show the label for the second value, unless the two available values are commonly juxtaposed opposites, so users can be expected to understand what the second value should be. A toggle control with only the first value displayed is shown in the following image.

You can style a toggle control using cascading style sheet properties. For example, you can use the background-color CSS property to change the color of all toggle sliders on a page

based on the selected value. To set the color of the toggle sliders when the first value is selected, use the CSS selector **.ibx-switch-slider.round**, and to set the color of the toggle sliders when the second value is selected, use the CSS selector **.ibx-switch.checked .ibx-switch-slider.round**. For example, to set the slider color to green when the first value is selected and red when the second value is selected, you can add the following code to the CSS text editor for a page in WebFOCUS Designer, which you can access from the Outline.

```
.ibx-switch-slider.round {

    background-color: #77cc77;

}


.ibx-switch.checked .ibx-switch-slider.round {

    background-color: #ff2323;

}
```

When the page is run and the first value is selected, the toggle slider displays a green background, as shown in the following image.



When the second value is selected, the toggle slider displays a red background, as shown in the following image.

Add a Toggle Control to a Page

In pages assembled from existing content, you can use the toggle control to quickly switch between two filter values. These are especially useful for dimension fields with boolean values, or that have two available values that represent all of your data.

Procedure

1. Create a new page assembled from existing content. On the WebFOCUS Home Page, click the plus button and then click **Assemble Visualizations**.

   WebFOCUS Designer opens and prompts you select a page template.

2. Select a page template.

   The WebFOCUS Designer canvas opens.

3. Add a content item with a parameter filter for a dimension field to the page.

   A count of available filter controls appears on the Filters tab on the sidebar.

4. Open the Filters tab and then click the **Add all filters to page** button to add all available filter controls, or right-click a single filter parameter in the list and click **Add to page** to select one or more specific filter controls.

   The default filter control, a dropdown menu for dimension fields, appears for the selected alphanumeric filters.

5. Select and then right-click a dropdown menu filter control and click **Convert**.

   The Convert Control To dialog opens.

6. Click **Toggle** to transform the control into a toggle control.

7. Optionally, on the Settings tab, in the Data Settings section, clear the **Display label two** checkbox to show only the first value in the toggle control.

8. Optionally, on the Settings tab, in the Data Settings section, change the display values that appear in the toggle control, and the actual values that are passed from the control. If you change the actual values, make sure that they match the values in the filtered data source exactly. Otherwise, the filtered content may not return any values when the filter is applied.

9. Save and run the page. When you click the toggle slider, the filter selection switches from the first value to the second value.

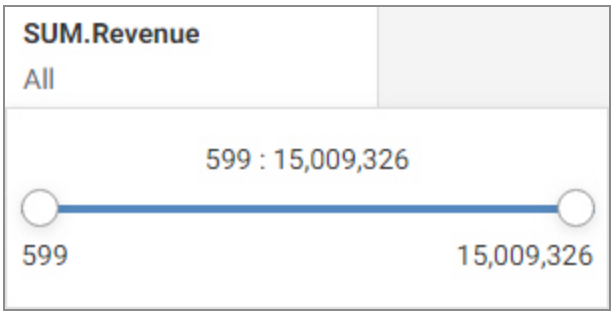
Manually Loading Content to a Page

When the Enable initial auto-load option from the WebFOCUS Designer Visualization tab is cleared, the data is not automatically loaded into all content containers when you load it for the first time. It will display a message asking you to refresh the content from the container menus or the page toolbar. You will see an info icon on the refresh button. When you hover over the info icon, it will say "*Refreshing loads the content and applies all the*

filter values." You can input the filters according to your preference and then click on the **Refresh** button. The content loads as per filters and the info icon disappears after the first click on the **Refresh** button.

Working With Slider Controls on a Page

A slider control is a horizontal track with a marker or markers that you can slide between a minimum and maximum value. This versatile control is often used to choose a numeric value within a fixed range. An example of a slider control is shown in the following image.



Create a New Slider Control Using WebFOCUS Designer

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

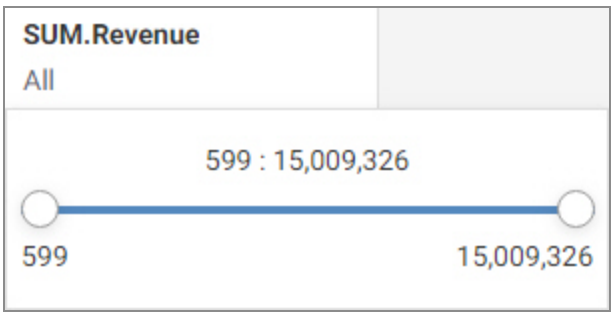
   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Add a dimension field and, optionally, a measure field to your chart.

   If there are no dimension values in the chart by which to aggregate the numeric values on the slider, a tooltip indicates that slider selections are not relevant.

4. Drag a measure field into the Filter toolbar.

   A slider control appears, allowing you to select default values for the filter parameter, as shown in the following image.



5. Set the default range of values for the filter.
6. Optionally, right-click the control on the Filter toolbar and click **Greater than**, **Greater than or equal**, **Less than**, or **Less than or equal** to select only the minimum or maximum value for the filter.

   When a parameter using one of these options is added to a page in WebFOCUS Designer, the control is a slider with a fixed start or end point.

Create a Slider Control From Content Created in WebFOCUS InfoAssist

Procedure

1. On the WebFOCUS Hub or WebFOCUS Home Page, in the Workspaces area, in the +Content menu, point to **InfoAssist**, and click **Report** or **Chart**.

   The Open dialog opens.

2. Select a data source in the Open dialog and click **Open**.

   opens.

3. Create a report or chart.

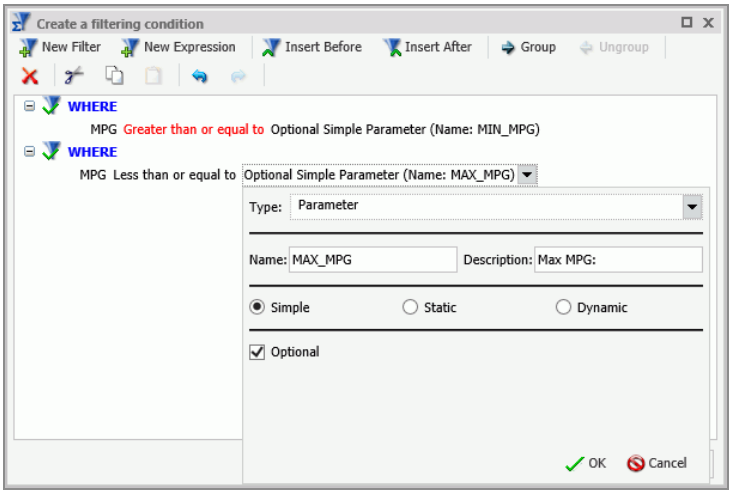
   To learn more about creating content in WebFOCUS InfoAssist, see the *ibi™ WebFOCUS® InfoAssist User's Manual*.

4. On the **Data** tab, click **Filter**.

The Create a filleting condition dialog opens.

5. Create two optional simple parameters representing minimum and maximum values and make them optional.

   In this example we create the minimum and maximum parameters for the MPG field in the car report. An example of the completed filtering condition is shown in the following image.



6. Save your changes and exit WebFOCUS InfoAssist.
7. On the Hub or Home Page, right-click your new content item, and then click **Edit with text editor**.

   The Text Editor window opens.

8. Edit the syntax by providing the data range values.

   An example of the modified syntax is shown in the following image.

ReportSlider

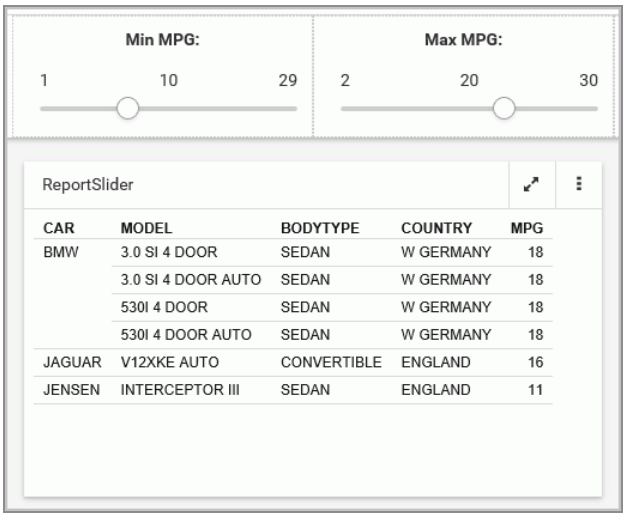
```
ENGINE INT CACHE SET ON
SET PAGE-NUM=NOLEAD
SET SQUEEZE=ON
-DEFAULTH &WF_HTMLENCODE=ON;
SET HTMLENCODE=&WF_HTMLENCODE

SET HTMLCSS=ON
-DEFAULTH &WF_EMPTYREPORT=ON;
SET EMPTYREPORT=&WF_EMPTYREPORT

-DEFAULTH &WF_ARVERSION=2;
SET ARVERSION=&WF_ARVERSION

-DEFAULTH &WF_SUMMARY='Summary';
-DEFAULTH &WF_TITLE='WebFOCUS Report';
-DEFAULT &MIN_MPG=10;
-DEFAULT &MAX_MPG=30;
TABLE FILE ibisamp/car
PRINT CAR.SPECS.MPG
BY CAR.COMP.CAR
BY CAR.CARREC.MODEL
BY CAR.BODY.BODYTYPE
BY CAR.ORIGIN.COUNTRY
WHERE CAR.SPECS.MPG GE &MIN_MPG.(FROM 1 TO 39|FORMAT=D6).Minimum MPG:.;
WHERE CAR.SPECS.MPG LE &MAX_MPG.(FROM 2 TO 40|FORMAT=D6).Maximum MPG:.;
ON TABLE PCHOLD FORMAT HTML
ON TABLE NOTOTAL
ON TABLE SET CACHELINES 100
ON TABLE SET GRWIDTH 1
ON TABLE SET STYLE *
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/ibi_themes/Warm.sty,$
TYPE=REPORT, TITLETEXT=&WF_TITLE.QUOTEDSTRING, SUMMARY=&WF_SUMMARY.QUOTEDSTRING, ORIENTATION=LANDSCAPE, $
ENDSTYLE
END

-RUN

```

9. Save your changes and exit the Text Editor.
10. Create a new visualization using existing content. On the plus menu, click **Assemble Visualizations**.

    WebFOCUS Designer opens in a new tab.
11. Select a template for your visualization.
12. In WebFOCUS Designer, in the Resources panel with the Content tab selected on the sidebar, drag your new content item to the canvas.

    A badge appears on the Filters tab of the sidebar, indicating that filters are available to add to the page.
13. Click the Filters tab on the sidebar, and then click **Add all filters to page**.

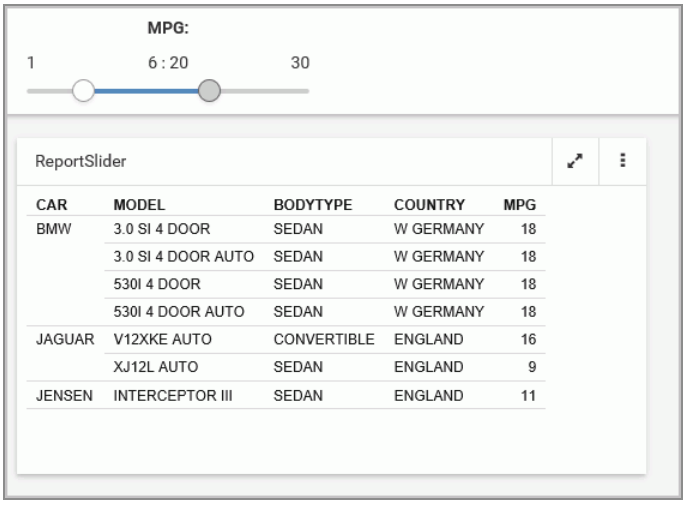
    The slider controls display in the filter grid, as shown in the following image.



CAR	MODEL	BODYTYPE	COUNTRY	MPG
BMW	3.0 SI 4 DOOR	SEDAN	W GERMANY	18
	3.0 SI 4 DOOR AUTO	SEDAN	W GERMANY	18
	530I 4 DOOR	SEDAN	W GERMANY	18
	530I 4 DOOR AUTO	SEDAN	W GERMANY	18
JAGUAR	V12XKE AUTO	CONVERTIBLE	ENGLAND	16
JENSEN	INTERCEPTOR III	SEDAN	ENGLAND	11

14. Optionally, combine the two controls together. Multi-select both controls, right-click one of them, and then click **Combine**.

    Your controls are combined. You can double-click the label to edit it to reflect your new combined control. An example of the combined slider control is shown in the following image.



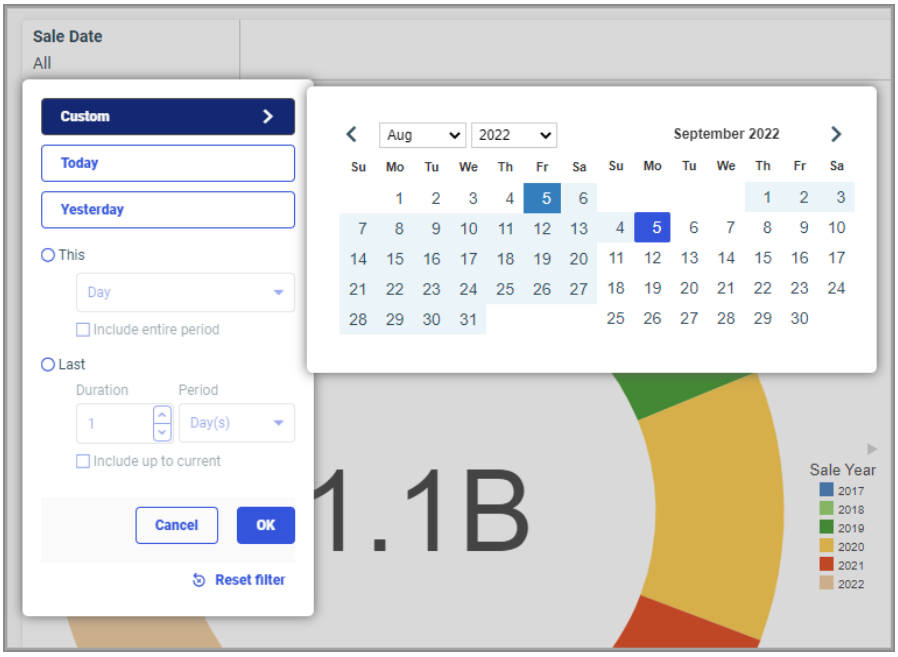
CAR	MODEL	BODYTYPE	COUNTRY	MPG
BMW	3.0 SI 4 DOOR	SEDAN	W GERMANY	18
	3.0 SI 4 DOOR AUTO	SEDAN	W GERMANY	18
	530I 4 DOOR	SEDAN	W GERMANY	18
	530I 4 DOOR AUTO	SEDAN	W GERMANY	18
JAGUAR	V12XKE AUTO	CONVERTIBLE	ENGLAND	16
	XJ12L AUTO	SEDAN	ENGLAND	9
JENSEN	INTERCEPTOR III	SEDAN	ENGLAND	11

15. Save your changes.

Working With Date Controls

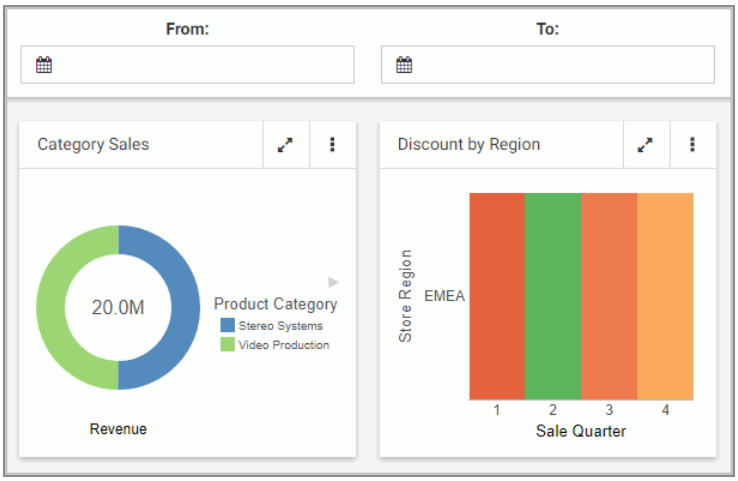
Parameters that contain dates are recognized by WebFOCUS Designer as date controls. You can filter date fields by setting start and end points to create a date range. When setting a date range, you can choose from a number of relative date ranges, or set a fixed custom

date range using a calendar control. Click the same date twice to set the date range to a single day. The calendar control and relative date range options are shown in the following image.

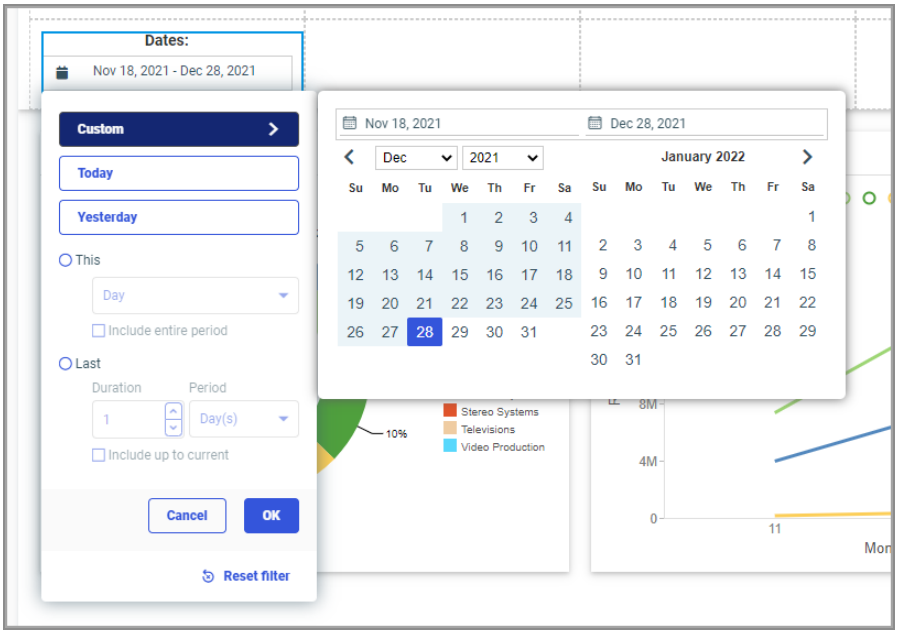


Once you have set the date range, click **OK** to apply the filter, or click **Reset filter** to clear the filter and include all available dates in your content. Click **Cancel** to close the date control without making any changes to your filters.

Date ranges set in WebFOCUS Designer are actually based on two parameters, one for the start date and one for the end date. As a result, when you add content created in WebFOCUS Designer with a prompted date filter to an assembled page, each of the controls is associated with a distinct parameter. One parameter uses the Greater Than WHERE condition and the other parameter uses the Less Than WHERE condition. If you add each date filter parameter to the page separately, the start and end date each use separate filter controls. If you add all filters to the page at once, they are combined automatically. An example of separate start and end date controls for external content on the page is shown in the following image.



When assembling a page from existing content and adding the date filters separately, you can still manually combine the two date controls into a single date range control. To do so, multi-select two date controls, right-click one of them, and then click **Combine**. An example of a combined date range control is shown in the following image.

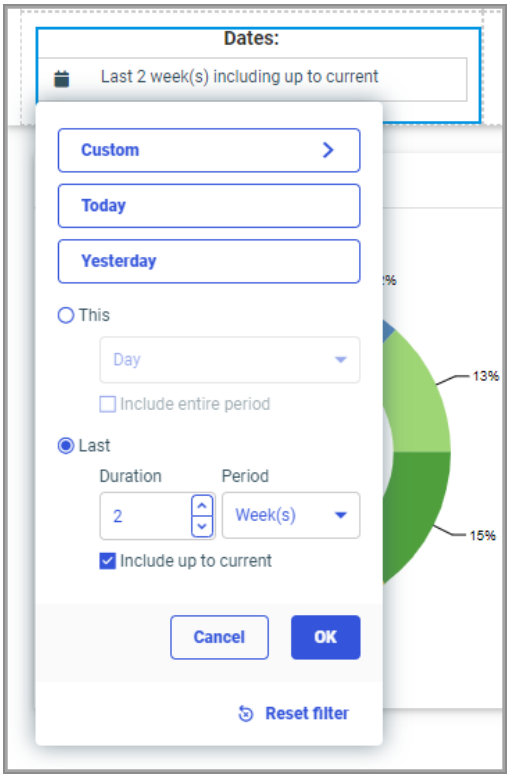


When creating new content with a date filter, the date control is automatically a combined control that allows you to select a date range.

The calendar feature inside a date control allows you to select a specific date value. Once you pick a specific date, it is always spelled out, so that it can be supported by all internationalized applications.

In addition to custom date ranges, you can make use of the presets. Simply select **This** or **Last**, and choose the appropriate period from the dropdown list. Your range can include

such periods as day, week, month, quarter, and year. When selecting **This**, you can select the **Include entire period** checkbox to view the data for all days in the period. When selecting **Last**, you must choose both duration and period to create a valid date range. Select the **Include up to current** checkbox to view the data for all dates leading to the current date in the selected period. An example of the date range for the last two weeks, up to the current date, is shown in the following image.

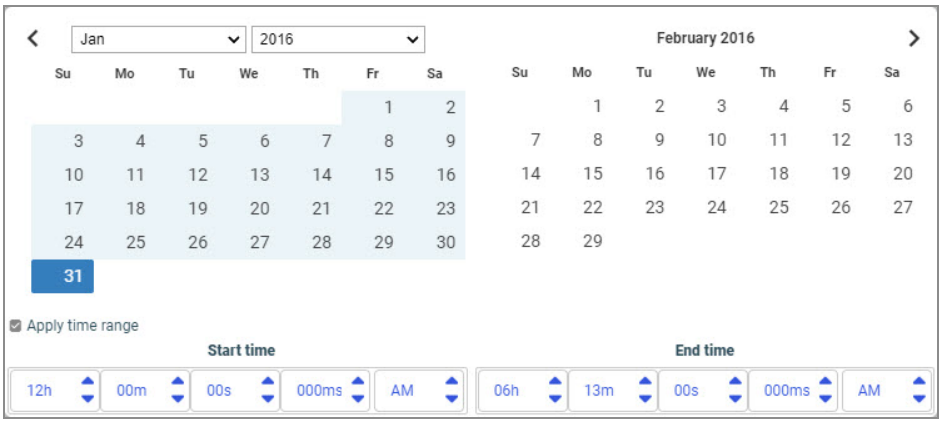


Setting Time Ranges in Date-Time Controls

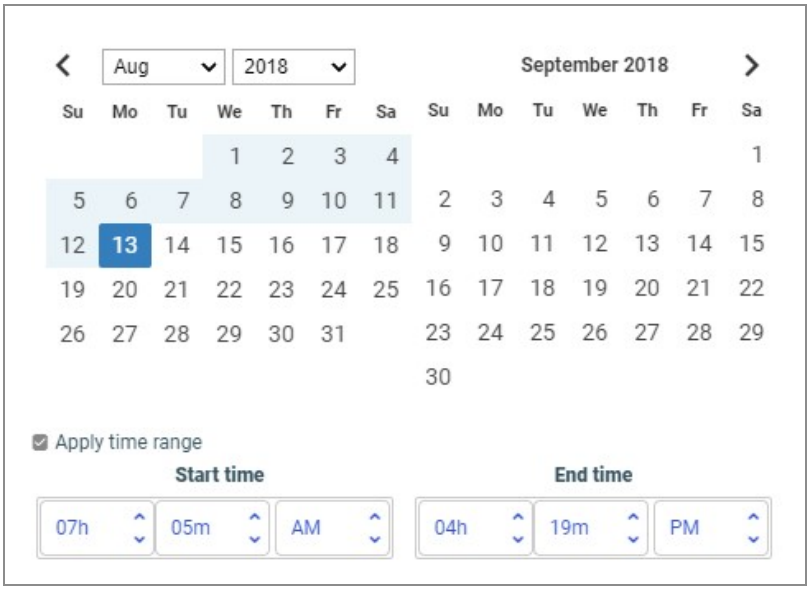
Fields that include both the date and a timestamp, as opposed to just the date, are considered to have a date-time format. Date-time fields are considered a separate field type from regular date fields. You can filter a date-time field to the millisecond, depending on the precision of the field format used for the field, allowing granular start and end points for date-time ranges.

When you create a prompted or static filter for a date-time field in a chart, report, or page in WebFOCUS Designer, you are presented with the ability to set a time range and change the time zone in addition to the regular date filtering options. When you select ranges for a static filter or use the **Custom** range option for a prompted filter, you can set a time range to provide more granular start and end points for the selected date range when using a

date-time field. The start time is applied to the start date, and the end time is applied to the end date. You can set start and end times precisely to the millisecond level, or choose not to set a time range by clearing the **Apply time range** checkbox. To set a time range using the filter control for a date-time field, when creating new content or running an assembled page, open the control and click **Custom**. Spinners to set the hour, minute, second, millisecond, and half of the day using a 12-hour system appear below the calendar, as shown in the following image, and you can also type numeric values into them.



The available time components depend on the format of the date-time field being filtered. The following image shows the date-time filter control for a field with a format of HYYMDI, which is precise to the minute level. As a result, only hour and minute time components are available to set.

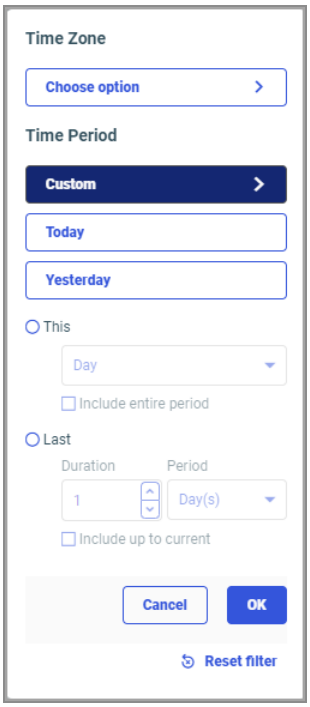


Once you have set the start and end date and time for your filter, click **OK** on the filter menu to apply it. To reset the filter to include all available values, open the filter menu, click **Reset filter**, and then click **OK**.

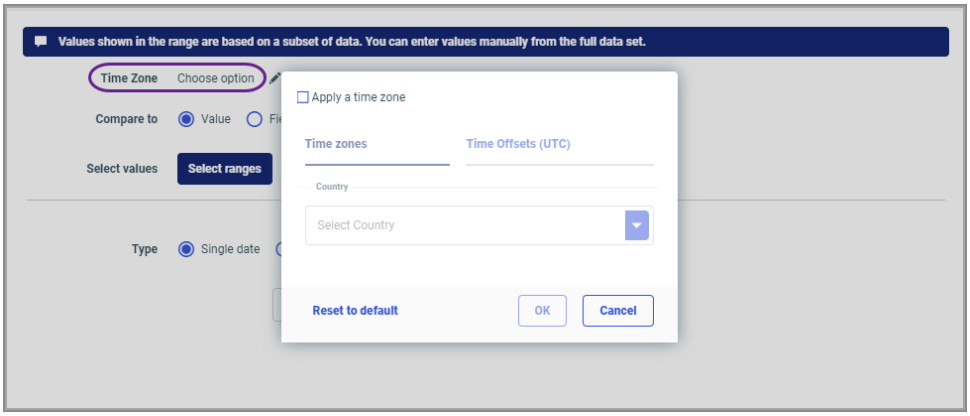
In some cases, however, the time values in your data may have been recorded in a different time zone than the one in which you are currently located. You can change the time zone that is applied to the filter to adjust the filtered data based on the time difference between your location and the location from which the data was recorded. When you set a time zone as part of a date-time filter, content is filtered to show data, which may have been recorded in a different time zone, based on whether it would fall within the defined time and date range in your current time zone.

For example, if the data was recorded in Greenwich Mean Time, which is UTC±0 during standard time, and you set the time zone for your date range to a location that uses Eastern Standard Time, which is UTC-5, then the filter that would start at 12:00 AM if the time zone were not changed instead begins at 5:00 AM when the time zone is set. This is because 5:00 AM in UTC±0, which is used as the time zone where your data originated, is the same time as 12:00 AM in Eastern Standard Time, the time zone that you selected for the filter. The start time for the filtered date range is shifted based on the difference between the two time zones. The data values displayed in your content do not change when you change the time zone used in your filter, and are assumed to have been written from a time zone with an offset of UTC±0.

To apply a time zone to a filter, drag a date-time field into the Filter toolbar or Filters bucket. In addition to the range options that are also available for date fields, a Time Zone option appears, with the default time zone selected, if one has been set on the WebFOCUS Reporting Server. To set the time zone for a prompted filter, click the **Time Zone** menu, as shown in the following image.

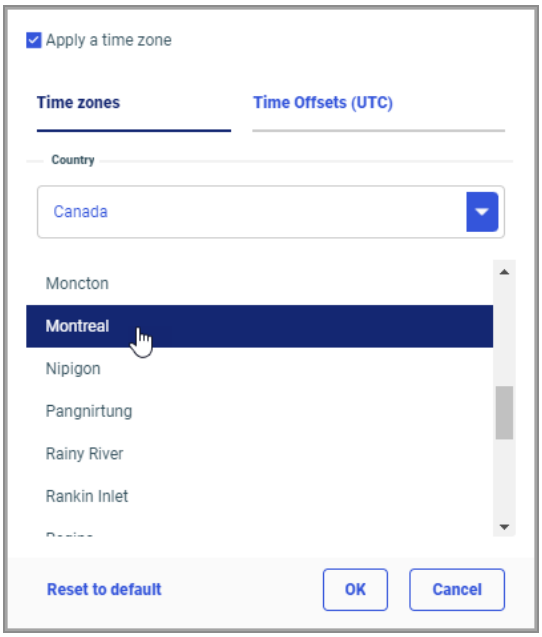


To set the time zone for a static filter, click the **Time Zone** option, as shown in the following image.



If no default time zone has been set, select the **Apply a time zone** checkbox to enable time zone selection. You can select time zones for locations sorted by country or territory, on the Time zones tab, or based on the UTC offset, on the Time Offsets (UTC) tab.

To select a time zone based on a location, on the Time zones tab of the Time Zone dialog, first select a country or territory from the Country dropdown list. You can start typing the name of a country or territory to navigate to it more quickly. Once you select a country or territory, a list of available location-based time zones in that country appears, as shown in the following image.



Select a location and then click **OK** on the filter menu to apply it.

Time zones based on locations automatically apply daylight savings, depending on the time of year. For example, the North American Eastern Time zone has a UTC offset of UTC-5 during standard time, and a UTC offset of UTC-4 during daylight time.

When applying a time zone to a date range filter for a date-time field, your data is interpreted as having been written from a time zone with an offset of UTC±0. This is the offset during standard time for the Western European Time time zone, during daylight savings time for the Azores and part of Greenland, and year-round for Iceland and most of West Africa. Therefore, if your data comes from a different original time zone, it is recommended to use a UTC offset equivalent to the time difference between the time zone where the data originated and your current time zone. For example, if your data originated in Los Angeles, and you are currently located in New York, then you can select an offset of UTC+3 to see content with date-time data from Los Angeles, filtered based on a start time of midnight in the New York since the time zone for New York is three hours ahead of the time zone for Los Angeles.

To select a UTC offset instead of a location-based time zone, click the **Time Offsets (UTC)** tab and select an option. Click **OK** on the filter menu to apply the new time zone.

Once you set your time zone, select a date range for your filter and apply it. Your content refreshes, and the hour at which your date range starts and ends is adjusted based on the selected time zone.

If you create a page with multiple date-time parameter filters, the same time zone is applied to all of them. When you select a time zone for one filter, an alert appears to inform you that it will also be applied to other date-time filter controls on the page.

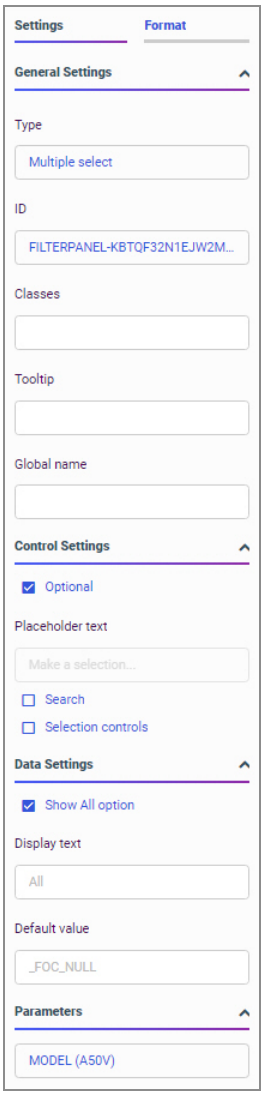
If you set a time zone and then want to revert to the default, open the Time Zone dialog and click **Reset filter**, then set the start and end date and time again. If you decide you do not want to apply time zone adjustments at all, open the Time Zone dialog, clear the **Apply a time zone** checkbox, and then click **OK**.

You can set the default time zone in the locale settings of your reporting server. On the WebFOCUS Hub, click **Management Center** and select **Server Workspaces**. Alternatively, in the Server Console, click the **Tools** menu and click **Workspace**. Click the **Settings** menu, point to **LOCALE**, and then click **LOCALE (Language, Numbers, Currency, Dates)**. Type the default time zone name into the TIMEZONE field. The time zone should use the IANA tz database name, which typically uses a format similar to **Region**/**City_Name**. For more information, see the List of tz database time zones on Wikipedia.

Styling Filter Controls in a Visualization

When creating a page from external content, you can configure the properties of the filter toolbar, a filter grid panel, or single filter control by using the Properties panel, which is context-sensitive. For example, when you click a filter cell on the toolbar or in a filter grid, the cell style properties open in the Properties panel. When you click a filter control within a cell, the configuration and style properties for this control open in the Properties panel. You can access properties for the entire Filter toolbar or a filter grid by selecting it from the outline. When creating a page from new content, a smaller set of options are available for a filter control or for the filter toolbar.

The Properties panel consists of the Settings tab and the Format tab. The Settings tab includes options to configure the behavior of the Filter toolbar, a filter cell, or a filter control. The Settings tab on the Properties panel for a filter control created for external content is shown in the following image.



When you select the entire page, if it was assembled from existing content, you can change the position of the filter toolbar using the following options:

- **Include Page Filters.** Select this checkbox to add a filter toolbar to the page, even if no filters have been added yet. Clear this checkbox to remove the filter toolbar.

  If **Include Page Filters** is selected, you can select one of the following options to change the position of the filter toolbar:

  - **Below Header.** The filter toolbar is placed below the page toolbar and header. This is the default.
  - **Above Header.** The filter toolbar is placed above the page toolbar and header.
  - **Left Position.** The filter toolbar is aligned vertically along the left side of the

page, below the page header.

- **Modal.** The filter toolbar is accessible in a modal window overlaid onto the page. Click the **Show filters** button on the page toolbar to open the modal window and make filter selections.

When the Filter toolbar or a filter cell is selected, the Settings tab includes two properties:

- **ID.** Contains a read-only unique CSS identifier.
- **Classes.** Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code.

Filter controls created within a page have different configuration and styling options than filter controls added to the page from referenced, external content. When you select a filter control that you created directly within the page, the Settings tab contains the following properties:

- **General Settings.** This section includes the following options:
  - **Type.** Displays the type of the control.
  - **ID.** Contains a read-only unique CSS identifier.
  - **Classes.** Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code.
  - **Tooltip.** Displays a tooltip when you hover over the filter control.

  When you select a filter control that was generated from external content using the Filters tab on the sidebar, the Settings tab contains the following additional property:
  - **Global name.** Designates a global name to the control, allowing you to synchronize control values on different pages in a portal. For more information, see Adding Filters to Visualization.
- **Control Settings.** This section includes the following options:
  - **Optional.** Toggles between optional and required control.
  - **Enable advanced date options.** Toggles between enabling and disabling advanced control for date options.

    Note: The option is selected, by default. When cleared, this filter will only include the calender window instead of the advance date range prescribed.

- **Allow reordering.** If selected, allows you to reorder values inside the control at run time. The default order is alphabetical. This property is only available for checkbox controls.
- **Placeholder text.** Enables a configurable placeholder text that you can show users inside a required control when it has no value. The default text is **Make a selection**. This property is only available for dropdown list controls.

  > **Note:** The Placeholder text property is only used for required controls. The placeholder text appears before a selection has been made. To change the default text for an optional control, if the Default value for the control is _FOC_NULL, meaning all values, enable the **Show All option** property and type a value for the Display text property. The Display text option in the control represents the _FOC_NULL, or all values, filter value.

- **Search.** Adds a search field to the filter dropdown menu. This option is available for dropdown list, checkbox, and radio button controls.

  > **Note:** If the select list contains 50 or more values the Search option is enabled automatically.

- **Selection controls.** Adds *Select all* and *Clear* buttons to the filter dropdown menu. This property is only available for multiple select lists and checkbox controls.

  > **Note:** The Selection controls and Show All options cannot be selected at the same time.

- **Paging.** Allows you to define the number of items to be displayed on a page. This option is only available for dropdown and double list.
- **Enable paging.** Toggles between enabling and disabling paging control.

  > **Note:** By enabling paging, both the '*Paging threshold*' and '*Items per page*' options will be enabled by default.

- **Paging threshold.** Determines when to trigger paging. Paging will get triggered if the number of values in the controls reaches the number defined in the threshold.

  > **Note:** By default, the threshold will be enabled and set to 50.

- **Items per page.** Determines the number of items to be displayed within a page.

  > **Note:** By default, the Items per page option will be enabled and set to 25.

- **Start of the week.** This list allows you to select the day of the week, that day becomes the left-most column in the calendar control, signifying that this is the day of the week on which a new week begins.

  > **Note:** The list contains Saturday, Sunday and Monday. Every calender option will change according to the selection you make.

- **Data Settings.** This section includes the following options:
  - **Show All option.** Adds an All option to the control that the user can select.

    > **Note:** Choosing this option results in the parameter receiving a _ FOC_NULL value. If this parameter is used in a WHERE condition, it results in the WHERE condition being removed from the request and all data values for this field displaying the page.

  - **Display text.** Allows you to specify a custom value for the Show All option in the control. The default text is *All*.

    > **Note:** The Display text property is available when the **Show All option** is selected. The display text option in the control represents all values. To supply a placeholder value for required controls that appears before a selection is made, use the Placeholder text property.

    - **Default value.** Displays the default value of the control. For optional parameters you can edit this field and override the control value.

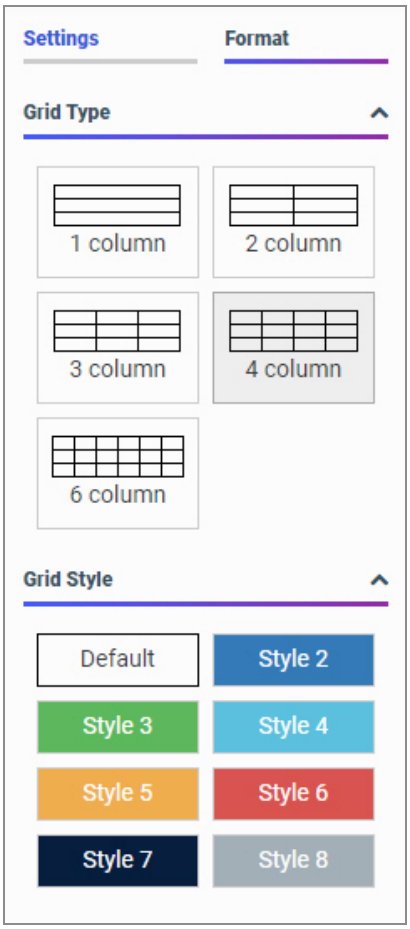
  The following options are available for toggle controls only:

    - **Label One.** Is the label that displays on the left side of the toggle control.
    - **Value One.** Is the actual filter value represented by the label on the left side of the toggle control. This is the default value of the toggle control.
    - **Value Two.** Is the actual filter value represented by the label on the right side of the toggle control.
    - **Display label two.** Allows you to hide or show the label on the right side of the toggle control. Hiding the label saves horizontal space, but provides less information to users.
    - **Label Two.** Is the label that displays on the right side of the control. This label only appears if the **Display label two** checkbox is selected.

- **Parameters.** Shows the name of the parameters that are associated with this control.

When creating a visualization using external content, the Format tab of the Properties panel provides layout and styling options for the Filter toolbar, a filter cell, or a filter control. These options differ depending on the origin of the filter and the item selected. Format options are not available for new prompted filters created in a visualization.

The Format tab of the Properties panel, for the filter bar on the Filter toolbar or in a grid container, is shown in the following image. You can use these options to change the layout of the cells in the Filter toolbar or grid container, and change the theme style it uses.



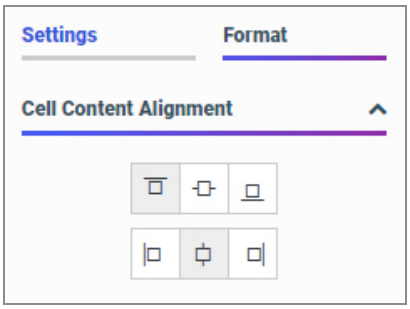
The Format properties for a bar are:

- **Grid Type.** Controls the grid layout of the filter bar. The options include 1-Column, 2-Column, 3-Column, 4-Column, and 6-Column.

  When you are using a columnar layout and the number of filters exceeds the number of columns, the extra filter controls are added to new rows in the Filter toolbar.

- **Grid Style.** Controls the style of the filter grid. The available styles are defined in the theme used for the page. When you select a style for a cell, the entire Filter toolbar is affected.

The Format tab for a cell is shown in the following image.

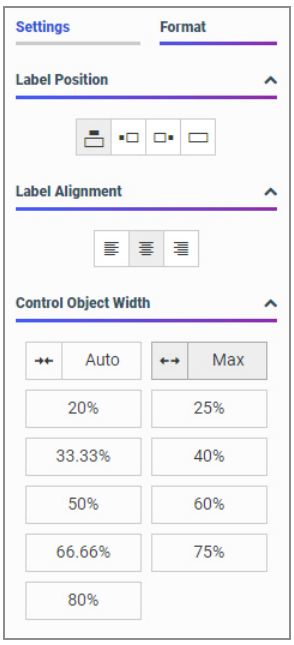


When you configure these properties, you modify the alignment of a control or other object within a cell. Cell format properties are only available for cells in the columnar grid or toolbar layout used in a visualization with external content. The cell and filter control in the carousel style layout used in a visualization with new content are not separate components, so the cell cannot be selected for formatting.

The properties for a filter cell are:

- **Cell Content Alignment.** Controls the alignment of the label and control inside the cell. The options include top, middle, bottom, left, center, and right. These options are available when using a columnar filter grid layout.

The Format tab for a filter control created for external content is displayed in the following image. You can modify the positions of labels in a control, define the alignment, and set the object width.



The style properties for filter controls in a page with external content are:

- **Label Position.** Controls the position of the filter label in the relation to the control. The options are above, right, left, and no label.
- **Label Alignment.** Controls the alignment of the filter label. The options are left, right, and center.
- **Direction.** Controls the alignment of the elements inside the control. This property is available for radio button, checkbox, and button set controls. The options are horizontal and vertical. The vertical option is enabled, by default, when the control has five or more values.
- **Label/Control Split.** Controls the space ratio between the label and control inside the cell. This option is only available when the label position is set to right or left.
- **Control Object Width.** Sets the width of the control in relation to the filter cell. The options are:
  - **Auto.** Adjusts the width of the control automatically to accommodate the name of each value.
  - **Max.** Fills the entire filter cell. This is the default value.
  - **Percentages.** Set the control width to various percentages, as they relate to the filter cell.
- **Control Object Height.** Sets the maximum height of the control. If the list of elements exceeds the maximum height of the control, a scrollbar is added to this control. This property is available for radio button, checkbox, and button set controls when their Direction property is set to vertical. The default value is 150px. You can change this value as necessary.

Prompted filter controls created in a visualization with new content always use a predefined, simple filter style. No format options are available for these controls.

Choosing an Event Model for Your Page Filter

When assembling a visualization from existing content, WebFOCUS Designer supports two event models for passing parameters to your page content:

- **On-selection Change.** Whenever you change a value of any filter control on the page, parameterized content refreshes to reflect your selection. This model is enabled, by default.

- **Submit Button.** After you make all desired changes to filter controls on the page and click the **Submit** button, parameterized content refreshes to reflect all your selections. This event model also allows you to use a Reset button to revert all filters to their default values. This model can be enabled by dragging a Submit button from the Control tab on the sidebar into the filter grid. Submit and Reset buttons appear, as shown in the following image.

  You can delete the Submit button to use the on-selection change event model for your filters, but still retain the Reset button, and you can also delete the Reset button to keep only the Submit button on the page.

Use On-selection Change Filters

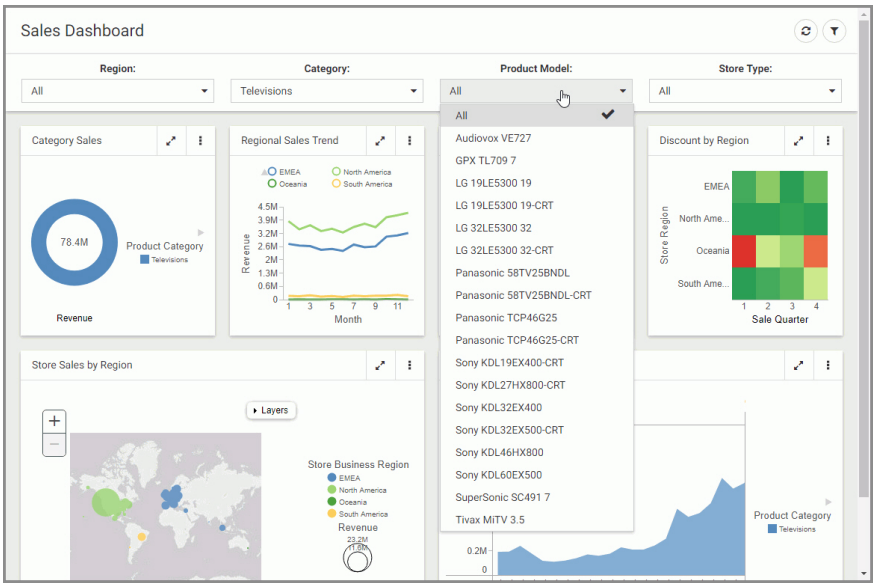
Procedure

1. Add filters to a page as described in Applying Prompted Filters From External Content.
2. Click the **Run in new window** button.

   Your content opens in a new browser tab or window, allowing you to interact with content and filters. If your page content contains default values, page filters and page content run in parallel, which results in a faster loading time.
3. Make filter selections.

   Each time you make a selection, the content refreshes to reflect it.

Note: Notice that, if you have parameters that come from the same field hierarchy in your data source, the filter controls are chained in such a way that each selection automatically reflects the available choices in other filters. In our example, we set **Category** to **Televisions**. Now, the Product Model filter only shows models of televisions, as shown in the following image. WebFOCUS Designer chains controls automatically, if the parameters are defined in the metadata layer with the WITHIN keyword to relate them.



4. Return to WebFOCUS Designer and save your changes.

Use Filters With a Submit Button

Procedure

1. Add filters to a page assembled from existing content, as described in Adding Filters to Visualization.
2. From the Resource selector, click the **Controls** tab, and then drag the **Submit** button onto the filter grid. This can be the filter grid in the Filter toolbar, or in a grid container.

   The Submit and Reset buttons display in the filter grid.

3. Optionally, customize the Submit and Reset buttons in any of the following ways:

   - Align the Submit and Reset buttons by selecting the cell in which the buttons reside and customize the Cell Content Alignment option on the Format tab of the Properties panel. In this example, we selected **Align control bottom** and **Align control center**.
   - Add a tooltip to the buttons by selecting each one and populating the Tooltip field on the Settings tab of the Properties panel.
   - Customize the width of the buttons in relation to the filter cell by selecting one of the options under the Control Object Width property. In this example, we selected **50%**.

   Note: You can delete one or both buttons by right-clicking them and clicking **Delete**.

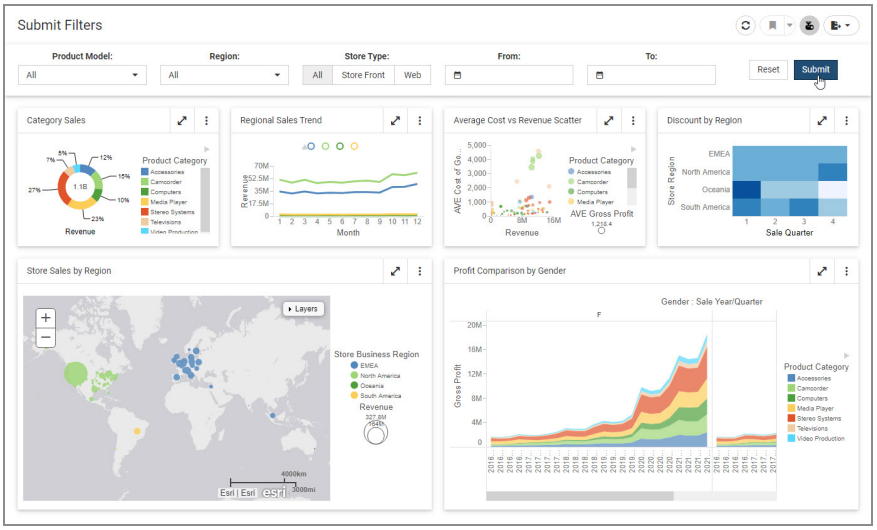
4. Click the **Run in new window** button.

   The content runs in a new browser tab or window, allowing you to interact with content and filters.

5. Make filter selections. Your parameterized content does not update immediately.

6. Click **Submit**.

   The content refreshes to reflect all your selections on clicking the Submit button, as shown in the following image.



7. Click **Reset**.

   The filters return to their default values.

8. Optionally, click **Submit** again to refresh the content with the default values.

   > **Note:**
   > If you deleted the Reset button, you must select default values manually, and then click **Submit** to return to the default state. Alternatively, you can click the refresh button on the page toolbar to refresh all content and filter controls on the page.

9. Return to WebFOCUS Designer and save your changes.

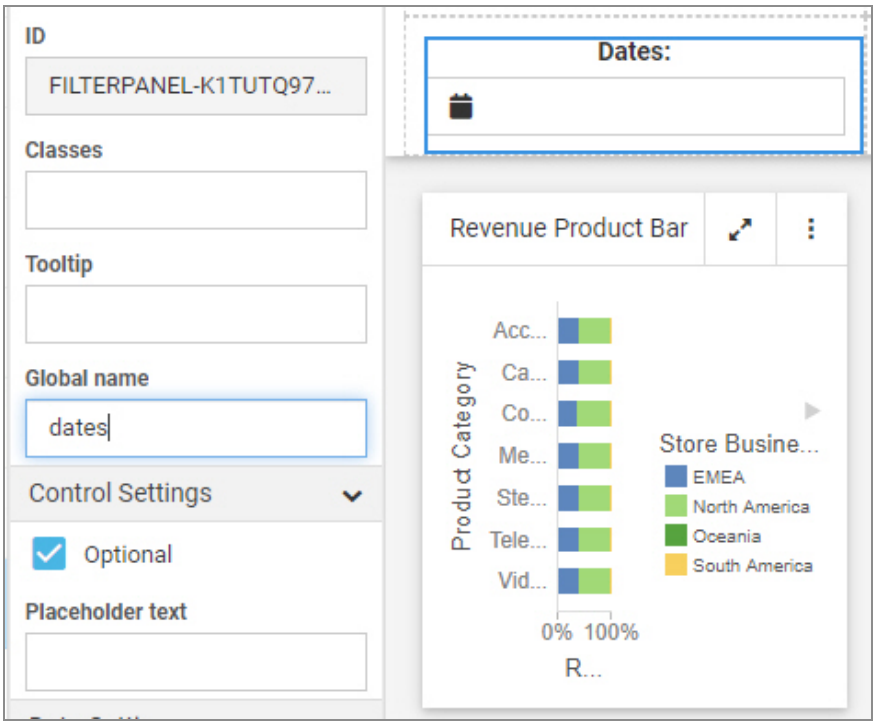
Using Global Name to Synchronize Filter Controls

The Global Name property is a powerful tool that allows you to quickly synchronize filter control values between different pages. The Global Name property is configured on the Settings tab of the Properties panel for a filter control in an assembled page. Once enabled, it allows you to match your filter selections across multiple pages at run time within the same browser session. This option is especially useful in a portal. The global name can be used to synchronize filter control selections across multiple pages in the same portal.

Configure Global Name Filter Control Property

Procedure

1. In WebFOCUS Designer, add filters to a page using existing content, as described in Applying Prompted Filters From External Content.
2. Click a filter control that you want to synchronize.
3. On the Properties panel, in the Settings tab, populate the **Global Name** field, as shown in the following image.



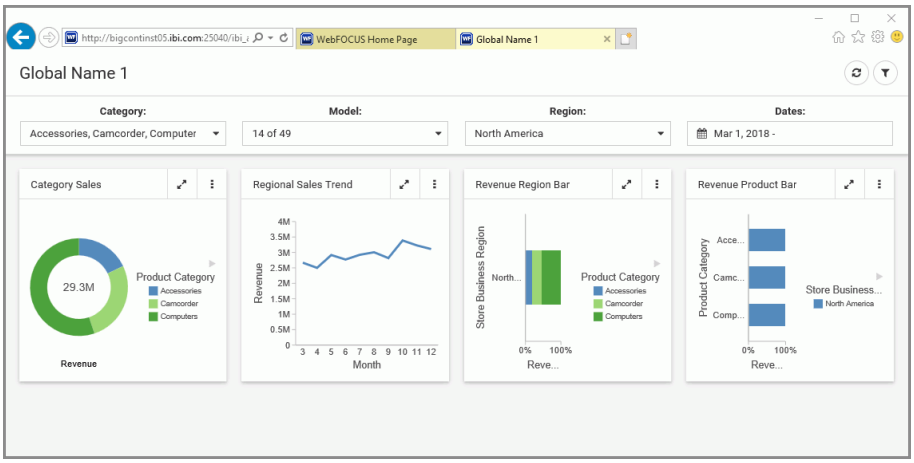
Note: You can choose any text as a global name for your control. Combined controls, such as date ranges and slider controls, have a single global name property.

4. Optionally, repeat step 3 for all the filter controls that you want to synchronize.
5. Save the page.
6. Create a second page, populate it with parameterized content, and add the same set of filter controls as you did in step 1.

Note: To streamline this process, you can use the Save As option to create a version of the existing page, leave the configured filters intact, and replace the content on the canvas. Make sure the Global Name values are identical between the filter controls on both pages.

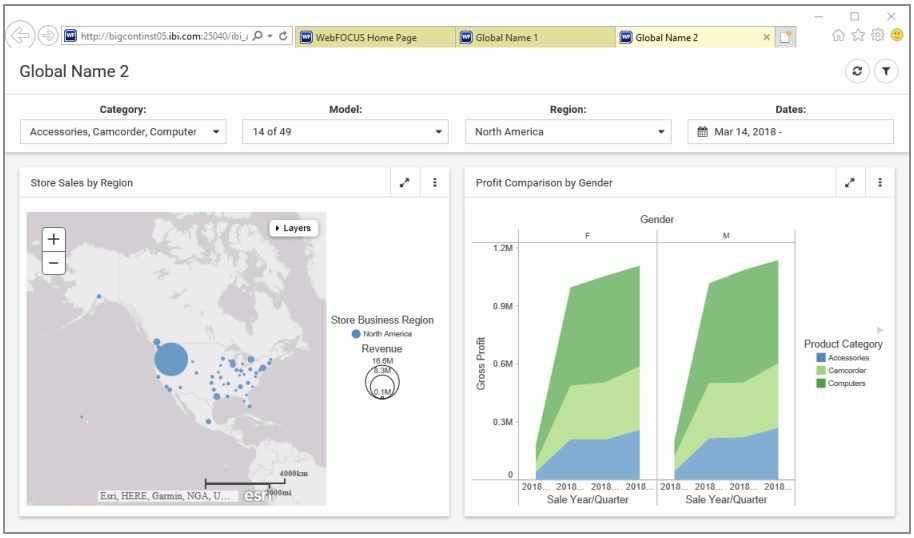
7. Save the second page and exit WebFOCUS Designer.
8. Run one of your newly created pages.
9. Select filter control values.

An example of the filter control selections is shown in the following image.



10. Run the second page.

    The page runs with the same filter control values as the ones you have selected on the previous page, as shown in the following image.



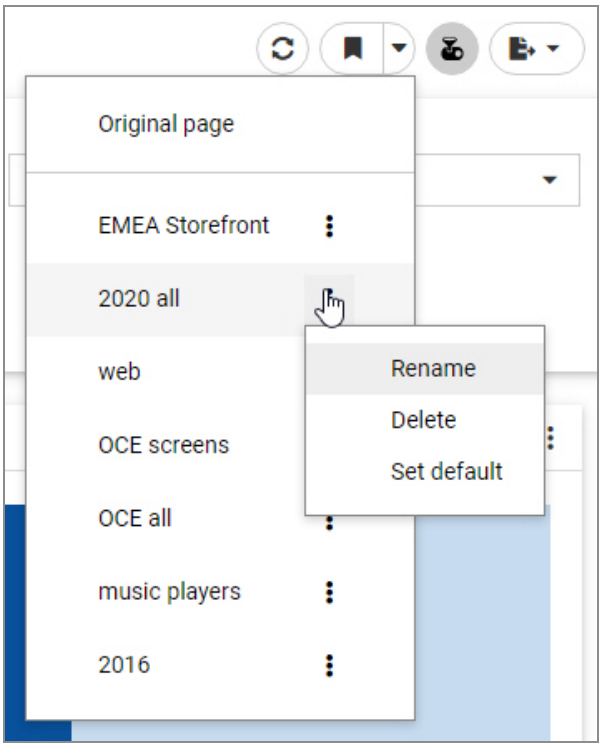
> **Note:** If your page was created prior to the WebFOCUS Release 8205 and it uses the Global Name feature and contains default content, you must save it again using the WebFOCUS Designer to ensure optimal performance.

11. Optionally, change the filter control values on the second page and see how they synchronize with the ones on the first page.

Bookmarking Control Selections in a Page

Bookmarking allows users to save filter control selections and other run-time content customizations that they make in a page so that they can easily reapply them when they run the page again later. This is especially useful when there are many filter controls on a page that a user may want to apply each time they access it. Bookmarks are personal to each user and can easily be created and deleted as needed.

Bookmarking is enabled automatically once the page has been saved, and is available in authored pages created with new content and in assembled pages built from existing content. To add a bookmark, make some filter selections when running a page, and then click the **Bookmarks** button , which appears on the page toolbar at run time. You are prompted to type a name for the bookmark. Click **OK** to apply it. A maximum of 46 characters display for each bookmark name. Once applied, the bookmark is added to the list, which you can open by clicking the dropdown menu arrow next to the Bookmarks button. Select a bookmark from the list to refresh the page and apply the associated set of filter values. The bookmark list also includes the **Original page** option, which reloads the page with the default filter values selected. From the bookmark list, you can also use the menu for each existing bookmark to rename or delete the bookmark, or make it your personal default set of filter values when you load the page, as shown in the following image.



To load a specific Designer page with a pre-existing bookmark, append the URL parameter `&IBI_bookmark=bookmark%20name`, ensuring that `bookmark%20name` is replaced with the exact bookmark identifier. For example, `http://localhost:8080/ibi_apps/run/IBFS/WFC/Repository/My_Folder/Designer_Page?IBI_bookmark=My%20Bookmark`.

Each user can create a maximum of ten personal bookmarks for a page. If you reach this limit on a page, delete an existing bookmark to add a new one. The Original page bookmark is always available and cannot be deleted.

Bookmarks also save certain user customizations made in the page. For example, if you use on-chart filtering in an authored page at run-time to create a filter, you can create a bookmark to save it. In authored pages, you can also change the filter condition from included values to excluded values and change the aggregation operation, and in assembled pages, you can change the content that displays in unlocked containers. All of these changes are saved when you create a bookmark.

Setting Dynamic Default Values for Filter Controls

When assembling pages from external content, you can personalize default values for filters in a page based on users or conditions. This feature uses an amper-amper (&&) global variable to specify the default option for a filter control. You can then use variables, functions, and conditions to set the values of these global variables. For example, you can set the Region value for a user, using the && global variable, and link it to the filter control to show their region as the selected value, or you can base the default values for a calendar control on the current date so that they always show a relevant, relative date range.

Personalize Default Values for Filter Controls

You can use global variables to dynamically set the default values of filter controls based on the user who is running the page.

Procedure

1. Start by creating a FOCEXEC which specifies the global variable and the default values. In this example, we are setting default values for different users for the Region control.

   a. On the default WebFOCUS Hub or Home Page, in the Workspaces area, click the +Content button, point to **Other**, and then click **Text Editor**.

      The New Text Resource dialog opens

   b. In the New Text Resource dialog, click **FOCEXEC (fex)**.

      The WebFOCUS Editor opens.

   c. Add the following FOCEXEC code to set the global variable:

```
- &&DEFREGION

-SET &&DEFREGION= IF &FOCSECUSER EQ user1 THEN 'North America'
ELSE

-IF &FOCSECUSER EQ user2  THEN 'EMEA' ELSE  'South America'
```

   d. Save your changes and close the Text Editor.

   e. Publish the FOCEXEC.

2. Bring the global variable in effect by either running the FOCEXEC or mapping its path in the Administration Console for it to be run when the user signs in.

   To map the FOCEXEC you just created in the Administration console, add the FOCEXEC path to the **Paths to be executed on user Sign-in** field in the **Other** section under Application Settings. The FOCEXEC path name can be copied from the Properties panel in the Hub or Home Page.

   Note: If you are setting the FOCEXEC to be run on sign-in, make sure that the WebFOCUS user credentials are passed to the server. One way to do that is to set the server connection to **Trusted** and select the **Pass WebFOCUS User ID and other Groups** radio button. For more information on how to use Administration Console, see the *ibi™ WebFOCUS® Security and Administration* technical content.

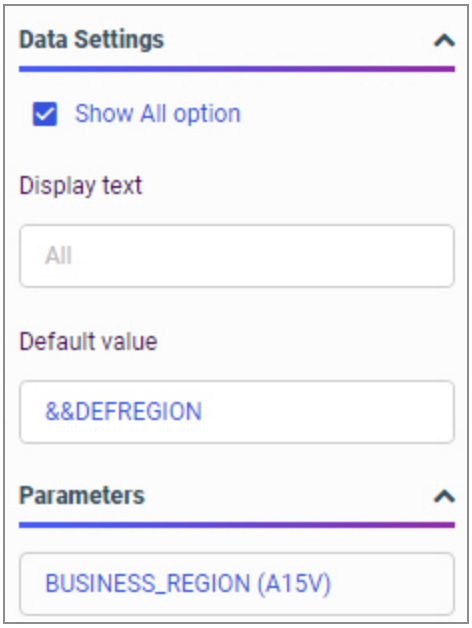
3. Assemble a page from existing content, as described in Create a Visualization With

Existing Content in WebFOCUS Designer.

4. Populate your new page with the content that features the Region parameter and add the **Region** filter to the canvas using the Filters tab on the sidebar, as described in Applying Prompted Filters From External Content.

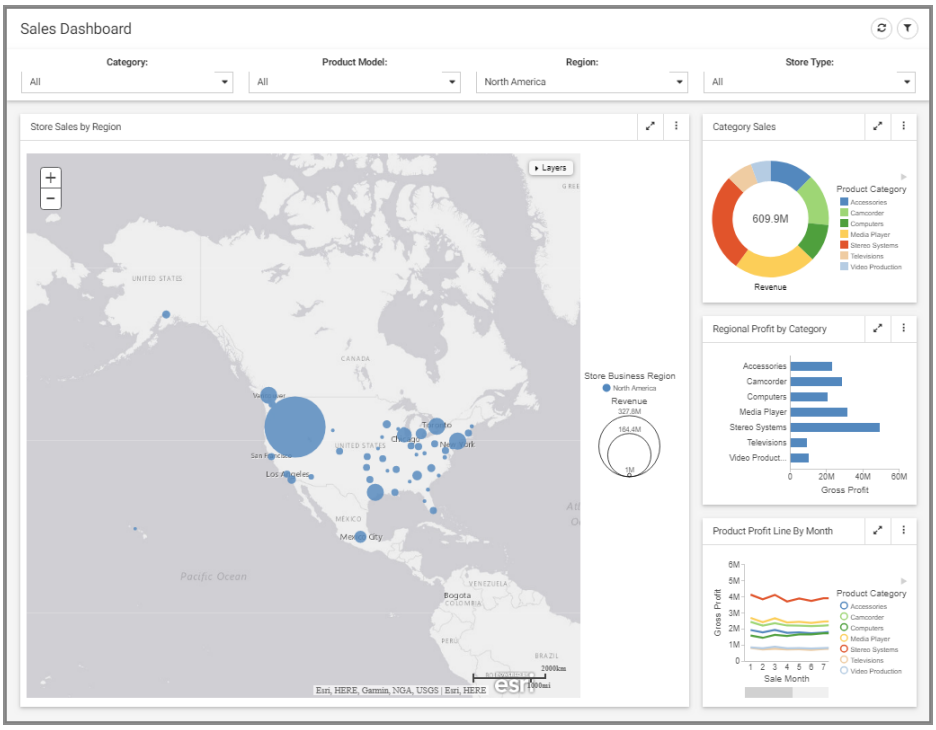
5. Click the **Region** filter, open the **Properties** panel and, in the Settings tab, under Data Settings, type the default value variable that you created in the FOCEXEC (in this case, &&DEFREGION).

   The following image shows an example of the default value property populated with the variable.



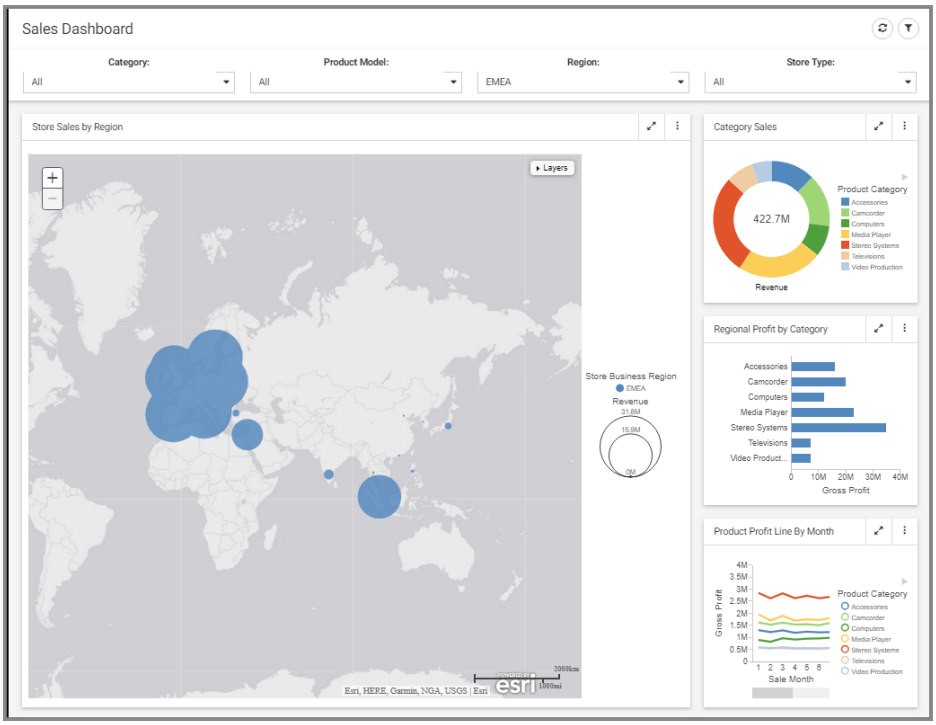
6. Save, publish, and run your page.

   The default value for the Region filter control is North America, as shown in the following image.



7. Sign in to WebFOCUS as one of the users mentioned in the FOCEXEC.
8. Run the same page.

   The following image shows an example of the user with the username *user2* running the page. The default region value now is EMEA.



Set a Dynamic Default Range for a Calendar Control

A calendar control in a page assembled from existing content is a combined control that allows you to filter for a date range by selecting a start date and an end date. You can use date functions to set global variables for the start and end date to a fixed length of time from the current date, then use those global variables as the default start and end date values for a calendar control.

The calendar control default dates must be entered using the full month name, for example, **December 31 2019**.

Procedure

1. Start by creating a FOCEXEC procedure that specifies global variables for the default start and end dates. In this example, we make the default start date a week before today, and the end date today.

    a. On the WebFOCUS Hub or the WebFOCUS Home Page, in the Workspaces area,

in the +Content menu, point to **Other**, and click **Text Editor**.

The New Text Resource dialog opens.

b. In the New Text Resource dialog, click **FOCEXEC (fex)**.

The WebFOCUS Editor opens.

c. Add the following FOCEXEC code to set the global variable:

```
-SET &LASTWEEK = AYMD(&YYMD, -7, 'YYMD');

-SET &&FROM_DATE = CHGDAT('YYMD', 'MDYYX', &LASTWEEK, 'A17');

-SET &&TO_DATE = CHGDAT('YYMD', 'MDYYX', &YYMD, 'A17');

-DONE
```

Three variables are defined in this FOCEXEC: &LASTWEEK, &&FROM_DATE, and &&TO_DATE. &LASTWEEK is a variable that provides the date from one week ago. It does need to be used directly in the calendar control, so it is not created as a global variable. &&FROM_DATE and &&TO_DATE need to be saved for use as default values in the calendar control in our page, so they are created as global variables.

&LASTWEEK is created using the AYMD function, which takes a date, a number of days to add to that date, and a date format. In this case, we are using &YYMD, which is a system variable that provides the current date in YYMD (year-month-day) format. We are subtracting one week (seven days) from the current date. The date format is YYMD.

The date format needs to use the full month name, and must be in month-day-year order. We use the CHGDAT function to convert the date to the proper format for both the &&FROM_DATE and the &&TO_DATE global variables. The CHGDAT function uses four parameters: the format of the input date, the order of the output date, the input date value, and the output date string format as an alphanumeric field.

The format of our two input dates, the date of one week ago set by the AYMD function and the current date, are both in YYMD format, so that is the first argument of both CHGDAT functions. Similarly, the output of both functions is MDYYX, which generates a date with the full month name in month-day-year

order. Typically, the format for such a date would be MtrDYY, but since the CHGDAT function uses date character strings instead of actual date values, it has its own date format designations. MDYYX sets the date order as month-day-year, with the year written in four digits, and the X indicates that the full month name should be displayed.

The third argument of the CHGDAT function is the date to be converted. For the &&FROM_DATE variable, it is &LASTWEEK, which was previously defined in this FOCEXEC using the AYMD function. For the &&TO_DATE variable, it is &YYMD, a system variable representing the current date in YYMD format.

Finally, A17 defines the string length of the converted date. 17 characters are long enough to fit any date string.

For more information about the AYMD and CHGDAT functions, see the *Using Functions* technical content.

d. Save your changes and close the Text Editor.

The FOCEXEC must be available to any users for whom you want to set default values in the page. Save it in a location where it will be accessible and then publish the FOCEXEC, or share it with any users after saving.

2. Bring the global variable into effect by either running the FOCEXEC or mapping its path in the Administration Console for it to be run when the user signs in.

   To map the FOCEXEC you just created in the Administration console, add the focexec path to the **Paths to be executed on user Sign-in** field in the **Other** section under Application Settings. The FOCEXEC path name can be copied from the Properties panel on the Hub or Home Page.

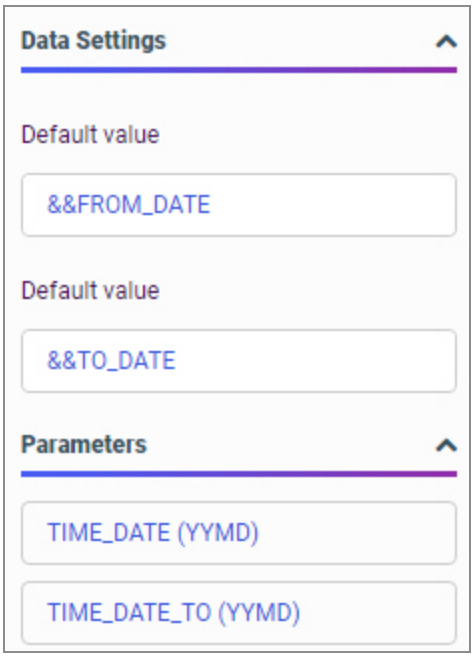
3. Assemble a page from existing content, as described in Create a Visualization With Existing Content in WebFOCUS Designer.

4. Populate your new page with the content that is filtered for a date range, and add the calendar control to the page using the Filters tab on the sidebar, as described in Applying Prompted Filters From External Content.

5. Select the calendar control, open the **Properties** panel and, in the Settings tab, under Data Settings, type the default value variables that you created in the FOCEXEC (in this case, &&FROM_DATE for the first value and &&TO_DATE for the second value).

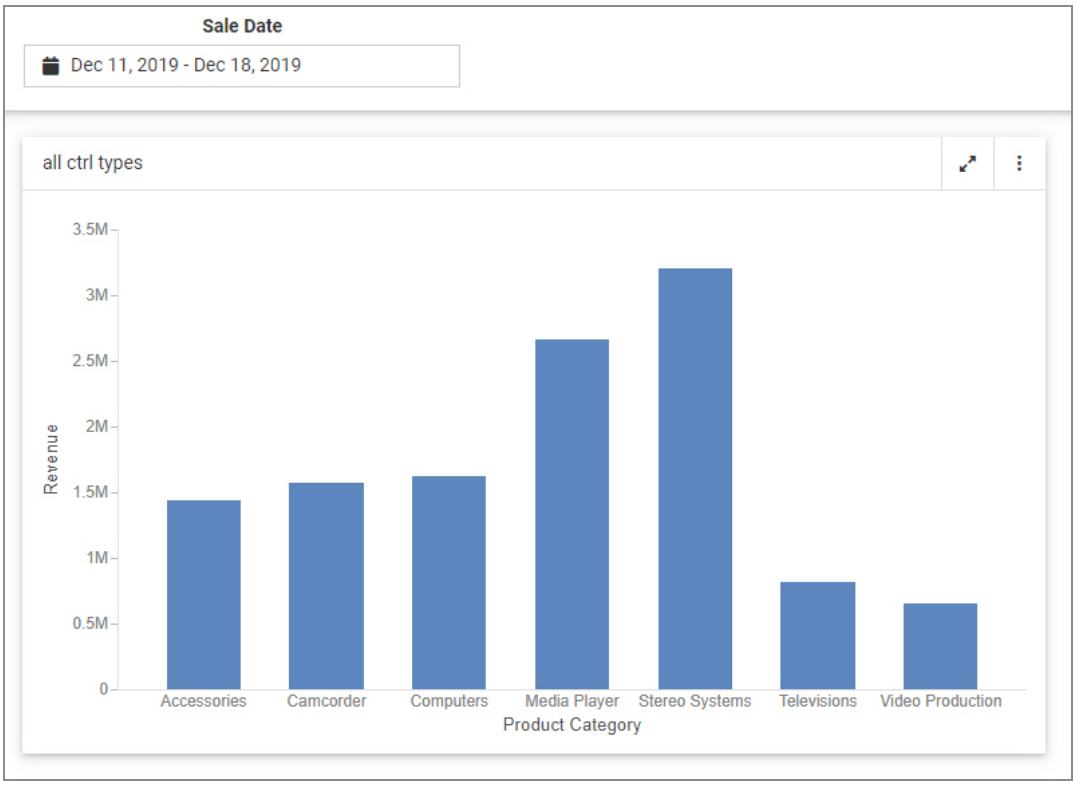
   The following image shows an example of the default value property populated with

the variable.



6. Save and run your page.

   The default date range in the calendar control is automatically set to the past week. The dates update every day to always represent a period of one week.



Adding Headers and Footers to Content

You can use headers and footers to add key information, such as the purpose of your chart or report and the audience for whom it is intended.

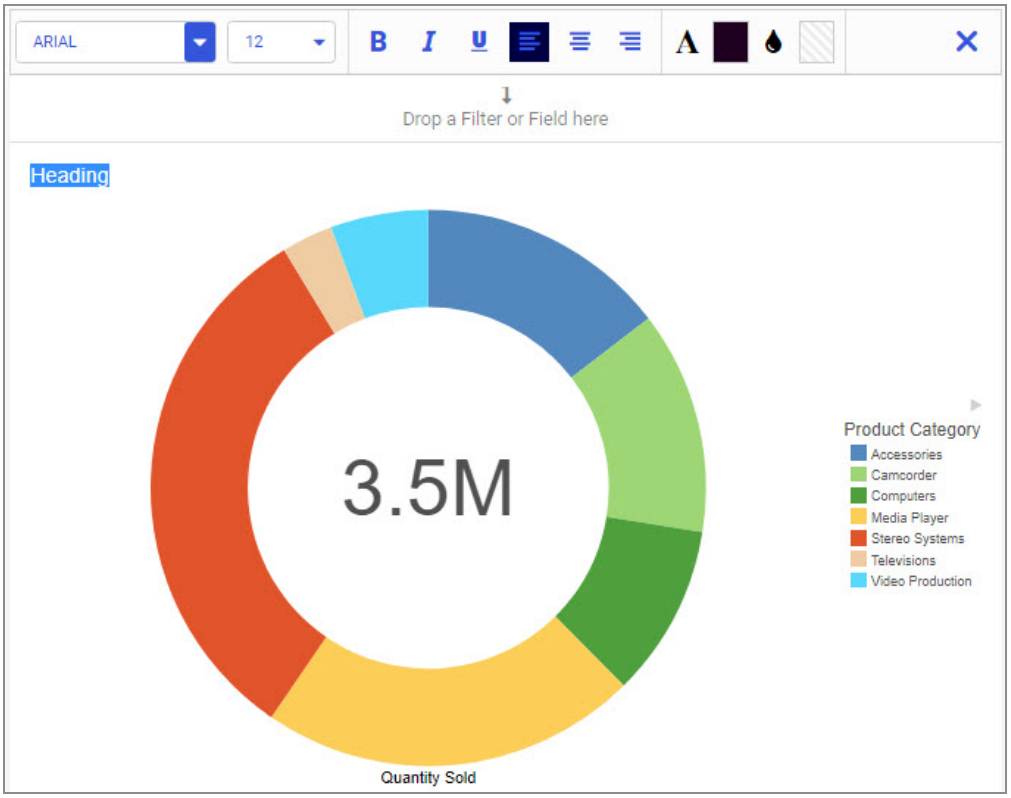
You can add multiple lines of information into the heading and footing areas, and apply different styling options to different sections of the heading or footing. This accommodates thorough explanations and additional information, while offering the most readable presentation.

When you create a chart or report, the heading area is available above your content, and the report footer is available below your content. You can click within these areas to edit them. To show or hide these areas, on the Settings tab, expand the Content section, then select the **Enable heading** or **Enable footing** checkboxes.

When you double-click the Page Heading or Page Footing placeholder text in the canvas, the heading or footing is selected for editing and the styling toolbar appears.

You can make styling changes to the text in your headers and footers, according to your preferences. Using a WYSIWYG canvas, formatting changes are applied instantly, allowing you to see the results of your styling selections as you make them. When editing your

header or footer, you can find the options at the top of the canvas, as shown in the following image.



You can change the font and font size using the dropdown lists. You can add bold, italic, and underline accents to your text. In addition, you can change the positioning of your text (left, center, and right). You can also customize the color of the text, as well as the background of the header or footer text area. When your formatting is complete, you can close the toolbar and continue working with your report. The canvas adjusts to ensure that all lines of the heading or footing are visible.

You can add a new line in the heading and footing by pressing the Enter key. The number of lines of heading and footing you can add to a report is only limited by the available space on your screen. A scrollbar is added to a report if all of the data cannot fit on the canvas or in the container.

When you are done editing the heading or footing, click the X button on the styling toolbar to close it. Once you have edited the header or footer, the updated text appears when the report is run.

If you delete the header or footer text and then close the styling toolbar, the header or footer is removed from the report. You can select the header or footer area and enter text to add them to the report again.

Heading and footing text in WebFOCUS Designer is created at the page level, so the heading or footing is displayed for each separate page of a chart or report. You can create separate pages in a chart by adding a field to the Multipage bucket, or in a report by right-clicking a field in the Rows bucket, pointing to **Insert breaks**, and selecting **Continuous numbering** or **Restart at 1**.

You can add dynamic heading or footing text by dragging a field from the Fields tab into the heading or footing text area, or by typing a less-than sign (<) followed by the field name. At run time, the first value for the selected field is displayed in place of the field name in the header or footer. You can combine dynamic page heading or page footing text with filters or page breaks to provide more relevant information at run time.

Add a Dynamic Page Heading to a Report

You can add a dynamic page heading to a report that changes depending on filter selections and sort values for each page.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, select a report format, such as the standard report or grid report layout.

4. With the Fields tab selected on the sidebar, In the Dimensions area of the Resources panel, expand **Product**, and add the **Product Category** and **Product Subcategory** fields to the Rows bucket, in that order.

5. In the Measures area of the Resources panel, expand **Sales**, and drag **Quantity Sold** and **Revenue** to the Summaries bucket.

6. Create a filter for Customer Country.

   In the Dimensions pane, expand **Customer** and drag **Customer Country** into the

Filter toolbar.

7. Select **Argentina**, and click outside of the filter control to apply the filter.
8. Create a page break after each Product Category value.

   Right-click the **Product Category** field in the Rows bucket, point to **Insert Breaks**, and click **Continuous numbering**.
9. Double-click the Page Heading text above the report to select it for editing.
10. Delete the placeholder text in the heading area, and type **Sales for**.
11. From the Dimensions pane, drag the **Product Category** field into the heading area after where you typed Sales for.

    The heading should resemble the following image. Dynamic values for the Product Category field is substituted for the text string starting with the less-than sign (<) at run time.

12. Click the close button on the styling toolbar to finish editing.
13. On the Properties panel, on the Settings tab, expand the Settings area and select **Enable footing**.

    The page footing placeholder text appears at the bottom of the page.
14. Double-click the page footing area to select it for editing.
15. Type, **This report shows figures for sales in**.
16. From the Dimensions pane, drag the **Customer Country** field into the footing area after the text that you just typed.

    The name of the field, with a less-than sign in front of it, appears in the page footing area.
17. With the entire page footing text selected, click the **Italic** button on the styling toolbar.
18. Click **Run in new window** to see a run-time view of the report.

    Notice that the page header appears and displays a different value for each Product Category value. The Page footer appears below each section of the report, and indicates that the values are for Argentina, since this was the value selected for the

Customer Country filter. If you were to select a different value for Customer Country, the footing text would automatically change.

The following image shows an example of what a section of the report may look like.

Sales for Accessories

Product Category	Product Subcategory	Quantity Sold	Revenue
Accessories	Charger	509	$19,101.40
	Headphones	1,095	$376,563.98
	Universal Remote Controls	869	$245,119.09

This report shows figures for sales in Argentina

Sales for Camcorder

Product Category	Product Subcategory	Quantity Sold	Revenue
Camcorder	Handheld	1,232	$206,880.45
	Professional	77	$270,196.10
	Standard	919	$331,031.88

This report shows figures for sales in Argentina

Setting Conditional Styling Based on Data Values

Conditional styling is a feature that applies unique styling to cells in a chart or report when their values meet specified criteria. This allows you to highlight values that are especially high or low, or are higher and lower than those in another field, making it easy to spot important information in your content. You can even use conditional styling to add drill-down links to values that match your set criteria, allowing users who run the chart or report to access additional context and information pertaining to those records. The following image shows a report to which conditional styling has been applied. Revenue values higher than 5,000,000 have a bright green background, while revenue values lower than 500,000 have a bright pink background.

Store Name	Sale Quarter	Quantity Sold	Revenue
Amsterdam	1	21,262	$6,341,648.05
	2	20,016	$5,975,387.79
	3	21,254	$6,422,633.53
	4	26,757	$8,125,623.97
Anchorage	1	4,101	$1,209,002.68
	2	3,919	$1,189,866.39
	3	4,780	$1,494,626.99
	4	6,105	$1,832,458.65
Arlington	1	3,452	$1,079,601.63
	2	3,390	$1,040,887.98
	3	3,328	$971,228.37
	4	4,194	$1,333,370.47
Athens	4	1,191	$373,357.59
Atlanta	1	6,564	$1,980,785.12
	2	6,577	$1,974,945.67
	3	6,297	$1,937,744.32
	4	7,723	$2,358,300.19
Bangalore	3	309	$99,173.60
	4	2,479	$755,082.32
Bangkok	4	115	$42,720.78
Barcelona	3	629	$190,813.70
	4	2,449	$803,790.69
Beijing	4	120	$35,823.95
Belfast	4	81	$23,207.90
Berlin	1	21,012	$6,291,658.12
	2	20,207	$5,989,913.09
	3	20,221	$6,087,656.34
	4	23,825	$7,148,966.71
Boise	1	947	$291,905.43
	2	971	$282,355.56
	3	950	$297,327.28
	4	1,213	$375,700.38

Conditional styling is set on the field level. To enable conditional styling for a field, right-click the field that you want to style in its bucket, and then click **Conditional Styling**. The Conditional Styling panel opens, where you can set the criteria that, when met, triggers conditional styling. By default, the field to which the conditional styling is applied is the field whose values the conditional styling criteria are evaluated against. You can change the field used in the criteria, however, allowing you, for example, to style values in a sort field based on the measure values associated with them.

You can set the operator and the field or static value to which the values of the selected field is compared. For example, you can choose to apply conditional styling to values in a field that exceed a specified value, or that are greater than the value in the same row of another specified field. For example, you may wish to highlight sales where the cost of goods was greater than the revenue, indicating a net loss. If you choose to compare field values to another field, you can select one from a list of measure or dimension fields in the chart or report. The list of fields is filtered based on the type of field to which the comparison is being made. To compare field values to a static value, type that value into the text box.

You can create a conditional styling criterion using the following comparative operators:

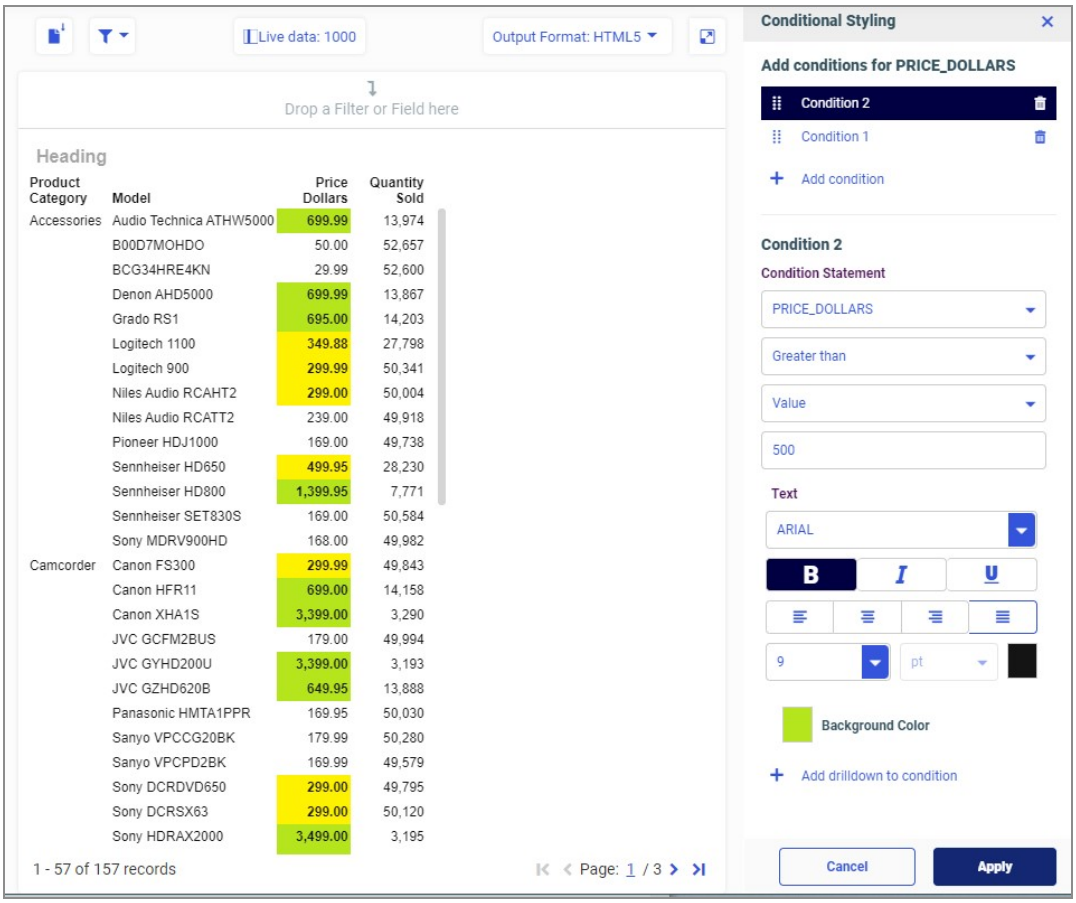
- Equal to
- Not equal to
- Greater than
- Less than
- Greater than or equal to
- Less than or equal to

Once you have set your criteria for conditional styling, you can apply a variety of styling properties to be used when the criteria are met. For a chart, you can set the color of risers that meet the conditional styling criteria. For a report, you can set the font, text size, text color, font style, justification, and background color of conditionally styled cells. The styling options for a report are shown in the following image.

In addition to standard report cell styling options, you can also create drilldowns as part of your conditional styling, which allow users who run the report to drill from values that match the conditional styling criteria to content or external resources with additional information. Values that do not meet the criteria do not have drilldowns applied. For more information about drilldowns, see Adding Drill-Down Links to Content.

Multiple conditional styling criteria can be added to each field. They are listed as separate conditions above the conditional styling options. If multiple conditions are available, you can click the name of the condition to edit it. Click the trash can icon next to a condition name to delete it. You can also use the handles next to the name of the condition to reorder your styling conditions, allowing you to specify the order in which the conditions

should be tested against each record in the selected column. This can be especially useful if you have conditions that overlap. For example, if you have a condition to set the background of cells with values greater than 250 to yellow, and a second condition to set the background of cells with values greater than 500 to bright green, then as a best practice, place the condition with the higher threshold first, so that only values above 500 are initially styled, before the remaining values are styled based on subsequent criteria, as shown in the following image.



Once you have set the conditions and the styling that you want to apply when those conditions are met, click **Apply**. You can then close the Conditional Styling panel. When you run the report, the values in the styled field that match your specified conditions have special styling applied, making them easy to identify at a glance.

Changing a Field Format

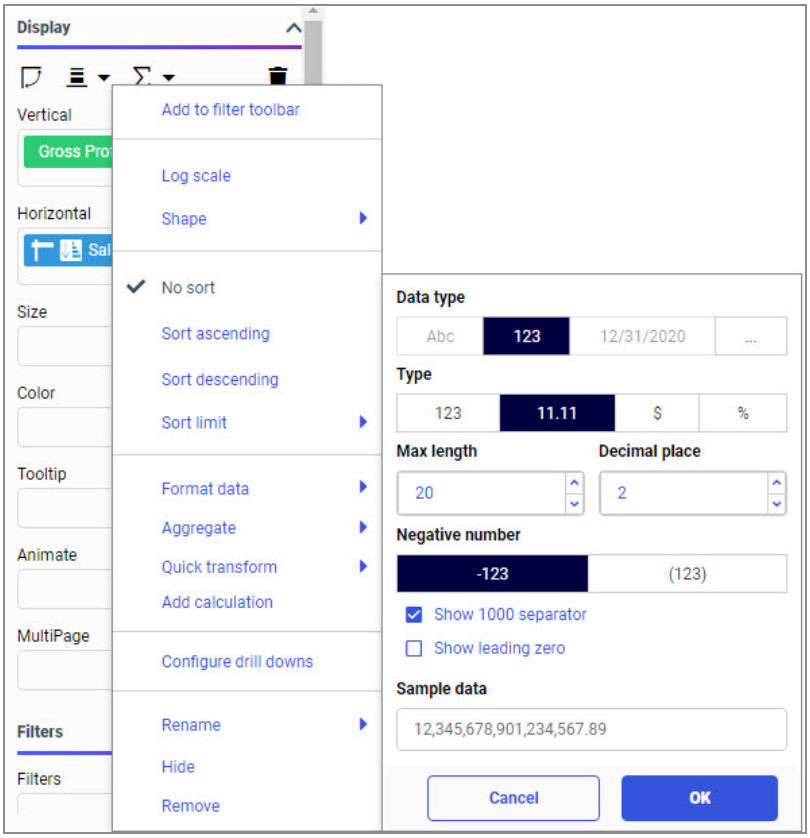
Changing the display or output format of fields that have been placed on the canvas or in buckets allows you to control how values in a field are interpreted and the styling that they

use when displayed. This feature allows for field display formatting, which is essential for any data-based content design tool.

In a report, the field format is reflected in the format of data values. In a chart, the field format may be reflected in data values in the chart, if they are displayed, or in the tooltip. Note that series based data labels in a chart are formatted independently from the field itself.

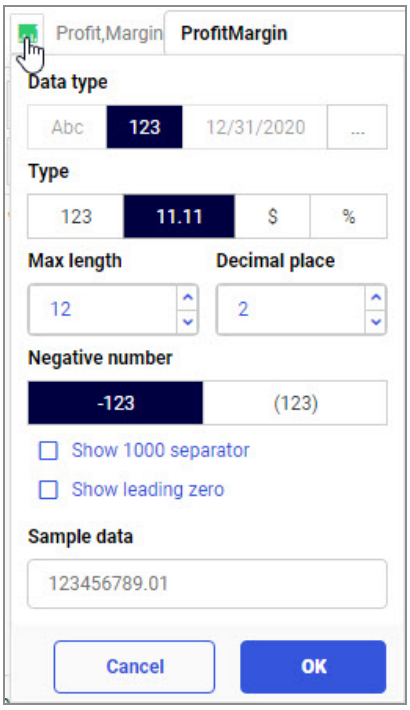
Note: These formatting options are applied when the WebFOCUS Reporting Server retrieves data from the data source. When that data is passed to the JavaScript chart engine to generate a chart, some formatting information may not be included and replaced with default settings. For reports, the selected field formatting options are passed directly.

To change the format of a field in a bucket on the Properties panel, right-click the field and point to **Format data**, as shown in the following image.

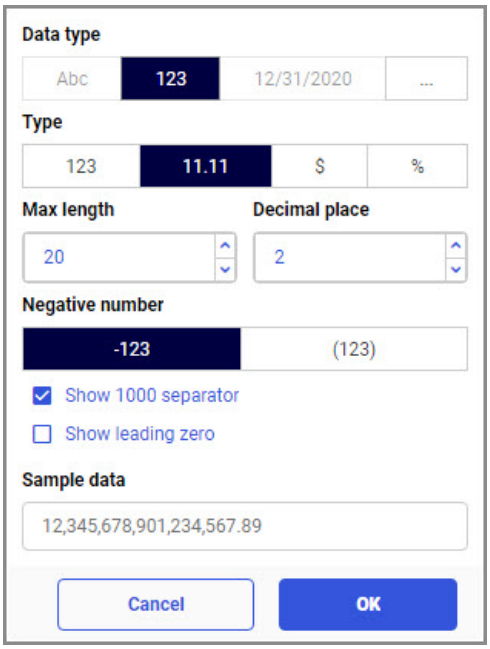


Note: When editing the format of a field, the only options available are those that are relevant to the selected field.

When creating or editing a calculated field, you can access Data Format options by clicking the Edit Format button, which appears with a different icon depending on whether the field is a number , character , or date field , and which is located above the Operator Selection pane next to the field name, as shown in the following image.



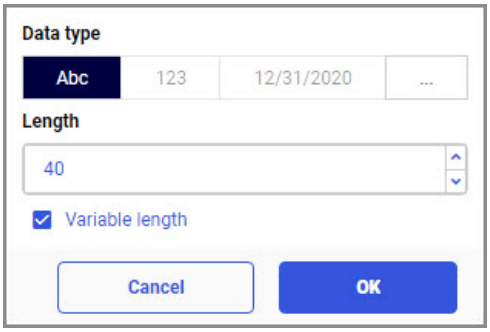
To edit the format of a field, first select the data type, then set details specific to that data type. In the following image, the numeric data type is selected, providing options for numeric fields.



You can select one of the following data types:

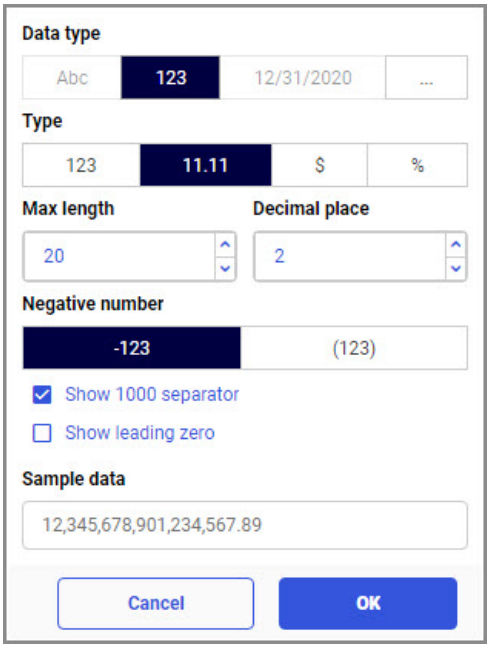
- Character format, for fields containing letters and numbers.
- Number format, for fields containing numbers that you want to sum or aggregate.
- Date format, for fields containing dates.
- Other format, for fields that have values that do not match one of the other formats, such as date-time fields or string fields, or are a variety of another type of field, such as packed decimal fields or Julian date fields.

When you select the character data type, you can specify character-specific formatting, as shown in the following image.



You can use the Length option to select the number of characters to display in the field, and enable variable length. Variable length indicates that the number of characters can vary depending on the data that is stored in the field.

When you select the numeric data type, you can specify number-specific formatting, as shown in the following image.

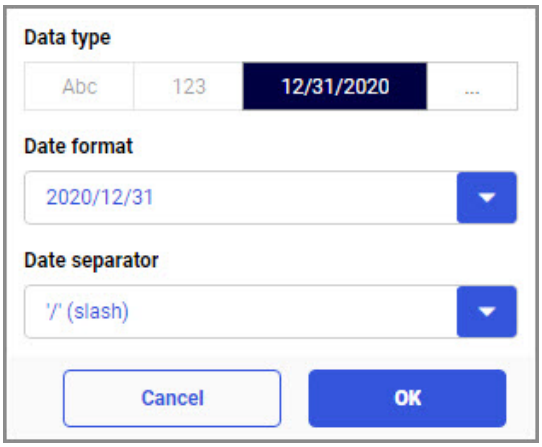


You can choose whether or not to display decimals, and set the maximum number of digits to show before and after the decimal point. You can also choose how to format negative numbers, whether to show thousands separators, and whether to show a zero before the decimal point when the value is less than one.

You can also specify currency and percent variations, such as a different currency symbol or a change in the use of a percentage value. When you select the currency option under Type, the Currency symbol and Symbol position options appear, allowing you to select the currency symbol and how it displays. When changing the format of a numeric field, a preview shows an example of what data values may look like based on the current field format settings.

Note: The Percent data format option automatically multiplies the field value by 100 so that decimal values are accurately converted to percentages. If your data values do not need to be multiplied by 100 and only need the percent symbol (%) added, select the custom format data type and manually enter a field format followed by %. For example, **D12.2%**.

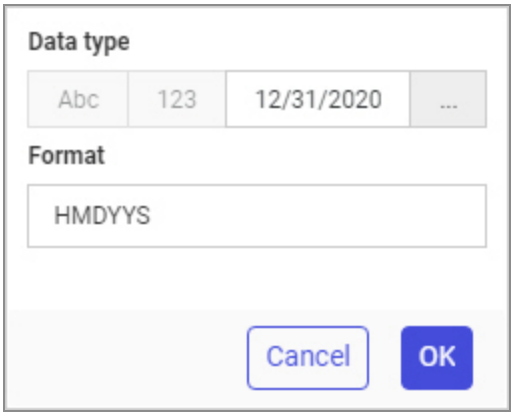
When your data type is a date field, you can make a selection from the supported date formats that are available for selection. The options for a date field are shown in the following image.



The Date format menu shows a list of date formats as applied to December 31 of the current year. You can select date formats that use separators or month names, or show a single date component.

When you select a date format that uses a separator, the Date separator menu is available. You can choose to use a slash (/), dash (-), dot (.), or space.

If you want to use a format not available in the character, number, or date sections, you can select the Other data type. Type a valid WebFOCUS field format into the Format text box. For example, the following image shows a field using the format HMDYYS, which is a date-time format.



The Other data type, like all of the other data types, does not allow field transformations, which prevents invalid formats. If the field was originally alphanumeric, you can enter a custom alphanumeric format. If the field was originally numeric, you can enter a custom numeric format. If the field was originally a date field, you can enter a custom date format.

Change the Number of Decimal Places in a Field

You can change the number of decimal places that display for a numeric field to show fewer or more decimal values. Showing more decimal values allows you to analyze your data with greater precision, while showing fewer decimal values may help make information more immediately digestible.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace with access to the wf_retail sample data, and select **wf_retail_lite.mas** as the data source.

   WebFOCUS Designer loads with options to create a single content item.

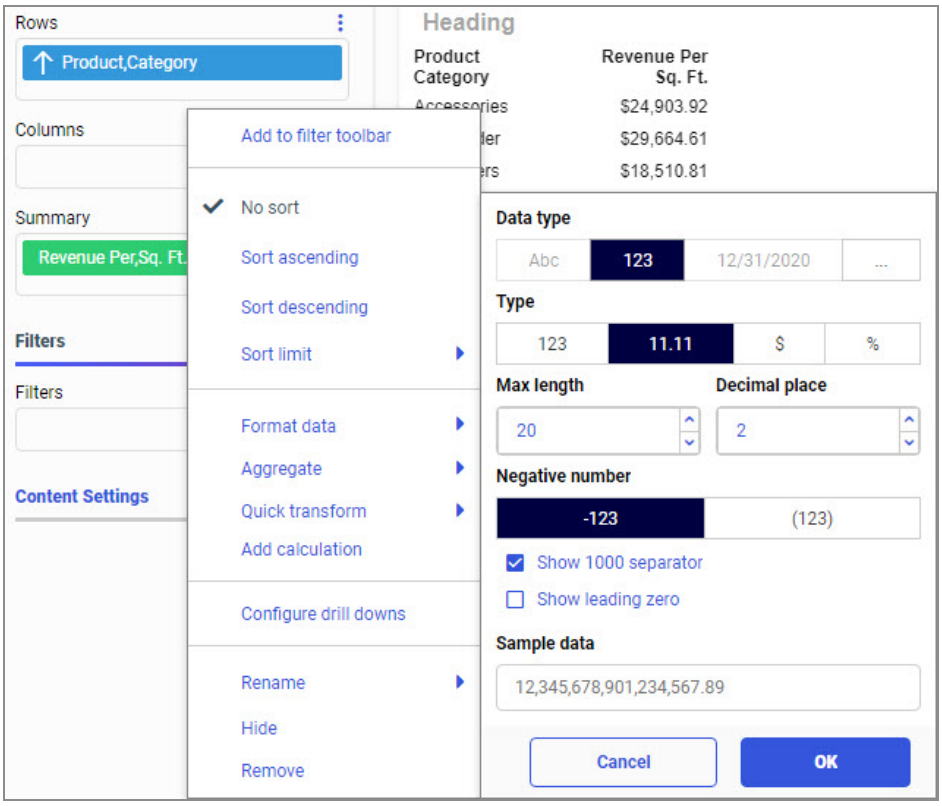
3. Change the content type to a report. In the Content picker, select one of the report layouts.

   Using a report makes it easy to see all data values directly on the canvas. If you are creating a chart, you can see exact data values when you point to a section of the chart to display a tooltip.

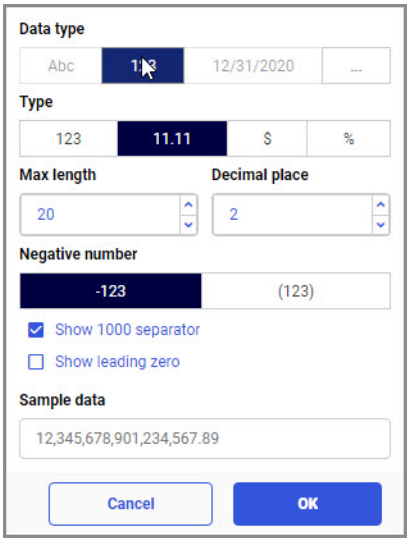
4. Add a sort field, for example, Product Category, to the Row bucket and a measure field, for example, Revenue Per Sq. Ft., to the Measure bucket.

5. Change the format of the measure field to show four digits after the decimal point, by doing the following:

   a. In the Measure bucket, right-click a field and point to **Format data**, as shown in the following image.



b. If the field is not already in a numeric format, change the data type to numeric by clicking the number button in the Data type section, as shown in the following image.



c. To display decimals, ensure that the integer option is not selected in the Type section. You can select the decimal, currency, or percent option depending on how you want the field to display.

d. To change the number of digits after the decimal, use the arrow control to increase or decrease the Decimal place value, or type a number in the text box.

e. Check the data preview in the Sample data text box. If it shows the symbols and the number of values that you want to display in your content, click **OK** to accept your format changes.

Result

The field whose format you modified now shows the specified number of decimal points, as shown in the following image.

Product Category	Revenue Per Sq. Ft. 1
Accessories	24,903.9186
Camcorder	29,664.6065
Computers	18,510.8106
Media Player	47,720.1179
Stereo Systems	55,985.4263
Televisions	15,276.0628
Video Production	11,110.4634

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Accessories	24,903.9186
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Media Player	47,720.1179
Stereo Systems	55,985.4263
Televisions	15,276.0628
Video Production	11,110.4634

Creating Calculations

When you create content, you are not restricted to the fields that exist directly in your data source. You can add calculations to automate summations and other mathematical tasks related to your data fields. You can specify operators, fields, variables, and functions when creating a calculation. If you can generate the information you want from the existing data, you can create a temporary field to evaluate and display it. A temporary field is a field whose value is not stored in the data source, but can be calculated from the data that is there. A temporary field takes up no storage space in the data source, and is created only when needed.

You can create two types of temporary fields, which differ in how they are evaluated:

- A pre-aggregation calculated field, or DEFINE, is evaluated as each record that meets the selection criteria is retrieved from the data source. The result of the expression is treated as though it were a real field stored in the data source.
- A post-aggregation calculated field, or COMPUTE, is evaluated after all the data that meets the selection criteria is retrieved, sorted, and summed. Therefore, the calculation is performed using the aggregated values of the fields.

Performing Basic Calculations

You can use the calculator to perform basic calculations on fields in your data hierarchy. When you create a calculated field, a new, unique field is created. It incorporates all of the data fields and expressions that you added to the calculation.

Once the calculation is complete, a new data field is created which can subsequently be used in your content. This field is placed on the Data pane, using the label of the originating field on which you created the initial calculation. For example, you can perform an addition operation on two fields. This action sums the values of the fields, displaying the total of the two when the field is used in a chart. You can also perform more advanced calculations that can result in different outcomes.

Calculated fields include DEFINEs, COMPUTEs, quick transforms, and more. You also have access to WebFOCUS functions that can be used in a calculation to perform specific operations on character and numeric fields. These display in a list of available functions . They are separated into categories, listed in alphabetical order, and are case-insensitive.

A DEFINE field is evaluated before data aggregation, while a COMPUTE field is evaluated after data aggregation. This means that DEFINE fields are especially useful to sort the data in a chart or report, while a COMPUTE field is especially useful as a measure field.

You can determine whether a calculation is created as a DEFINE or COMPUTE by selecting **Calculate at the source** or **Calculate after aggregation** in the calculator. When you select **Calculate at the source**, a DEFINE field is created, and when you select **Calculate after aggregation**, a COMPUTE field is created. When you create a DEFINE field, it is added to the field list, from where you can add it to your content. When you create a COMPUTE field, it is added to your content automatically, in the default measure bucket if it was created from the field list, or in the bucket from where you created the COMPUTE.

Access the calculation feature in one of the following ways:

- Right-click a field in the Resources panel and click **Add calculation**. This creates a DEFINE, by default, with the selected field added automatically to the calculation. If you create a DEFINE, it is added to the Resources panel, from where you can add it to your content. If you create a COMPUTE, it is added to the default measure bucket.
- Right-click a measure field in a bucket and click **Add calculation**. This creates a COMPUTE, with the selected field automatically added to the calculation. The calculated field is added to the bucket from where you accessed the calculator.
- Click the menu in the Dimensions area or Measures area of the Resources panel, and click **Add calculation**. This creates a DEFINE, by default. If you create a DEFINE, it is added to the Resources panel, from where you can add it to your content. If you create a COMPUTE, it is added to the default measure bucket.
- When creating a report, click the menu for the Rows bucket or the Summaries, Counts, Details, or Details with counter bucket, and click **Add calculation**. This creates a COMPUTE. The calculated field is added to the bucket from where you accessed the calculator.
- Right-click a calculated field that you created previously and click **Edit calculation**. This allows you to modify an existing calculated field. This option is available from the field list for DEFINE fields, and from a bucket in the Properties panel to which a calculated field has been added.

When you perform one of these actions, the calculator opens, as shown in the following image.

The numbering in this image points out the different areas of the interface, as a guide.

1. **Title bar.** Shows context information about the current calculation. For example,

New Calculation or Edit Calculation, along with the field name.

2. **Evaluation options.** Determines the type of calculation. Select **Calculate at the source** to create a pre-aggregation, DEFINE field, or select **Calculate after aggregation** to create a post-aggregation, COMPUTE field.
3. **Close button.** Closes the Calculator. Clicking this button performs the same function as the Cancel button.
4. **List chooser.** Allows you to select which list should be displayed in the Calculator. For example, functions.
5. **Search box.** Allows you to search for components across all subjects (Fields, Functions, and Variables). The search finds matches on contiguous text and performs a case-insensitive search. A flat list of matches is returned.
    - For Fields, matches are performed on Name, Title, and Positional (folder or segment) information in the hierarchy.
    - For Functions, matches are performed on Name, Category, Parameters, and Help text.
    - For Variables, matches are performed on Name.
6. **Field/Function/Variable list**. Lists the fields, functions, or variables that are available for selection and on which you can perform a calculation.

    The following considerations apply to Field/Function/Variable lists.

    - A Field list is always presented with Single-list mode. It operates the same way as the Field List tab in the Field Tree.
    - The Function list displays a categorized list of WebFOCUS functions, sorted case-insensitive in alpha order (ascending or descending). You can use the dropdown menu to select the category of the function that you want to use, or you can search for a function. Double-click or drag and drop a function into the Canvas and then supply parameter values to use it.

      You can still use a function, even if it is not listed, by typing it into the calculator canvas. See the *Using Functions* technical content for a complete list of available functions, including legacy functions.
    - A Variable list displays a list of system variables in WebFOCUS. The Variable list tab operates the same way as the Variable list tab in the Field Tree.
7. **Calculated field definition area.** Displays the field name and field title for which an

expression is being created. It displays an icon (separate) to allow its format to be set with the Data Format Selector.

- **Format icon**. You can use the Format icon to change the target field format for the calculation.
- **Properties**. Enables you to change the target field properties for the calculation, such as the field name and title, and whether to allow missing values.

8. **Operator Selection pane**. This pane displays a full, contextualized list of operators that are available in calculations. It also displays mathematical and logical operators. Additional statements (IF, THEN, ELSE) are also included.
9. **Canvas/typing surface**. This is where you build your calculation. It shows fields, aggregations, and other items related to the calculation you are creating. It also supports functions, variables, operators, values, and placeholders.
10. **Function Help**. When working with Functions, you may receive help messages, such as a description of the selected function and the values that you must supply.
11. **Actions**. Includes a Validate button that allows you to check whether the syntax that you have provided for the DEFINE or COMPUTE is structured correctly, and options to cancel or commit the calculated field.

Create a DEFINE Field Using a WebFOCUS Function

A DEFINE is a virtual field that is evaluated as each record that meets the selection criteria is retrieved from the data source. The result of the expression is treated as though it were a real field stored in the data source. It is added to the field list in the Resources panel, from which you can add it to multiple content items.

You can use a WebFOCUS function in a DEFINE or in a COMPUTE to transform data from an existing field to create a new field. Each function accepts a different set of arguments that are added in parentheses after the function name.

DEFINEs are built from the field list in the Resources panel.

DEFINEs can be created in the following ways:

- **In a Master File.** These virtual fields are available whenever the data source is used.
- **In a procedure.** A virtual field that is created in a procedure lasts only for that procedure.

In this example, a new DEFINE field is created that uses the DTRUNC function to supply the first day of the week for each sale date.

Procedure

1. Create a new visualization in WebFOCUS Designer, using wf_retail_lite.mas as the data source.
2. With the Fields tab selected from the sidebar, in the Resources panel, right-click a field or click the menu next to the Dimensions area or Measures area, and then click **Add calculation**.

   The calculator opens to create a new DEFINE field, by default. Notice that the **Create at the source** radio button is selected.
3. In the Calculator dialog, click the Functions tab fx.

   The Function list appears, and displays the first available function category.

   > **Note:** If you create the new calculation by right-clicking a field, that field is automatically added to the calculator text area. For the present example, delete this text before continuing.
4. Navigate to the DTRUNC function using one of the following methods:
   - In the search box, type **DTRUNC**.
   - Expand the function category dropdown menu, and select **Date/Date-Time**.

   Double-click the **DTRUNC** function, or drag it into the Calculator text area.

   The text area displays the function and identifies the required arguments, in this case, date and period. Notice that an example is provided in the space below the calculator text area.
5. In the text area, inside the parentheses after DTRUNC, select the word **date**.
6. In this space, specify the input date that is used to provide the first day of the week. In this case, instead of a single date, provide an entire date field, so that the DEFINE field generates a value for each input date value.

Click the Fields tab to access the Field list. Under Dimensions, expand **Sales_ Related**, **Transaction Date, Simple**, **Sale,Day**, and **Sale Date Details**, then double-click **Sale,Date**.

The Sale Date field is added as the first argument in the DTRUNC function, as shown in the following image.

```
DTRUNC( "Sale,Date" , period)
```

7. Replace the word **period** with the date component that you want the field to use as increments. In this case, it is the first day of each week. Type **WEEK** as the second argument in the DTRUNC function, in place of the **period** placeholder text. The completed function should resemble the following:

   ```
   DTRUNC("Sale,Date", WEEK)
   ```

8. Since the output of the DTRUNC function is a date field, the DEFINE field should use a date format.

   Click the **Edit format** button, change the Data type to a date format, and select an option of your choice from the Date format dropdown menu.

   Click **OK**.

9. Optionally, double-click the name of the DEFINE field to change it.
10. Click **Validate** to confirm that the DEFINE is set up correctly.
11. Click **OK** to return to the calculator.

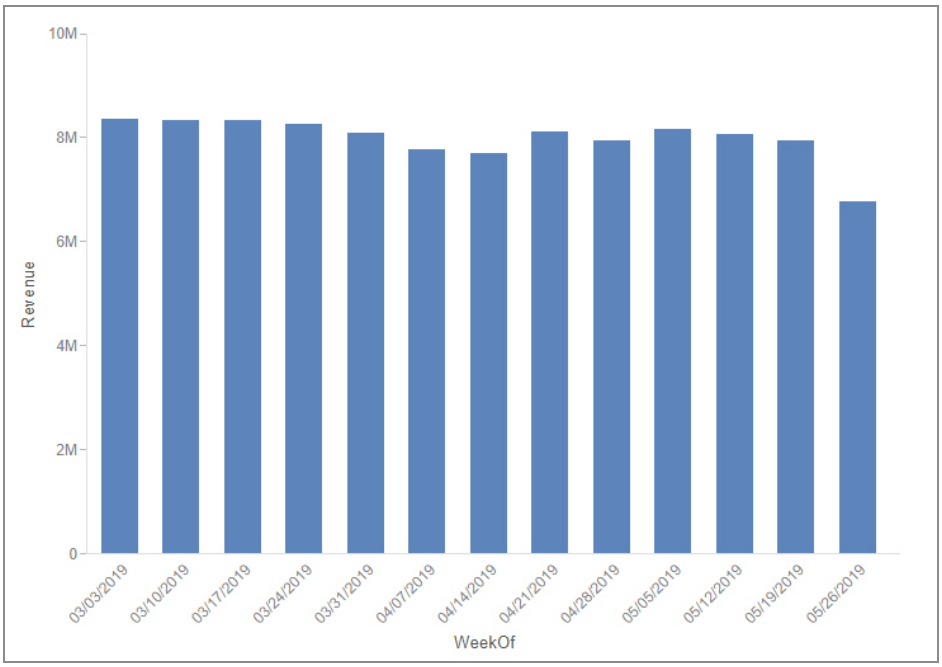
    If the validation indicated that there was an error, determine the cause of the issue and fix it.

12. Click **OK** to finish creating the DEFINE field.

    If you created the DEFINE by right-clicking a field in the Field panel, it displays at the bottom of the measure or dimension group where it was created from. If you have trouble locating your calculated field, type the name into the search box to find it.

13. Add the DEFINE to your content as a sort field.

    You can use the calculated field from this example to create a chart or report that shows sales information for each week, as shown in the following image.



Create a COMPUTE Field

COMPUTEs are calculated fields whose values are evaluated after all of the data that meets the selection criteria is retrieved, sorted, and summed. The calculation uses the aggregated (total) values of the fields. For example, based on the values of Revenue and MSRP fields in your data source, you could calculate the discount percentage.

Create a COMPUTE field by selecting **Calculate after aggregation** in the calculator.

Procedure

1. Create a new visualization in WebFOCUS Designer, using wf_retail_lite.mas as the data source.
2. With the Fields tab selected on the sidebar, on the Resources panel, in the Measures area, expand the **Sales** folder, and double-click the **Revenue** field to add it to a measure bucket.
3. From the measure bucket, right-click the Revenue field and click **Add calculation**.
4. In the Calculator dialog, build the COMPUTE.

Note: The field that you right-click to create the COMPUTE field is automatically added to the text area, as shown in the following image.

You can select another field, or add fields from the data source tree that display.

Note: For COMPUTEs, the Calculate after aggregation checkbox is selected, indicating that the field values are evaluated after the chart or report has been sorted.

5. Type the mathematical expression to create a COMPUTE field to evaluate the discount percentage using the Revenue and MSRP fields:

   a. Click to place your cursor before the Revenue field in the text area, and type **1 - (**.

   b. Click to place your cursor after the Revenue field, and type /.

   c. From the data tree, under Measure Groups, expand the **Sales** folder and double-click the **MSRP** field to add it to the expression.

   d. Type **)** to close the expression. The completed expression for the COMPUTE field should resemble the following:

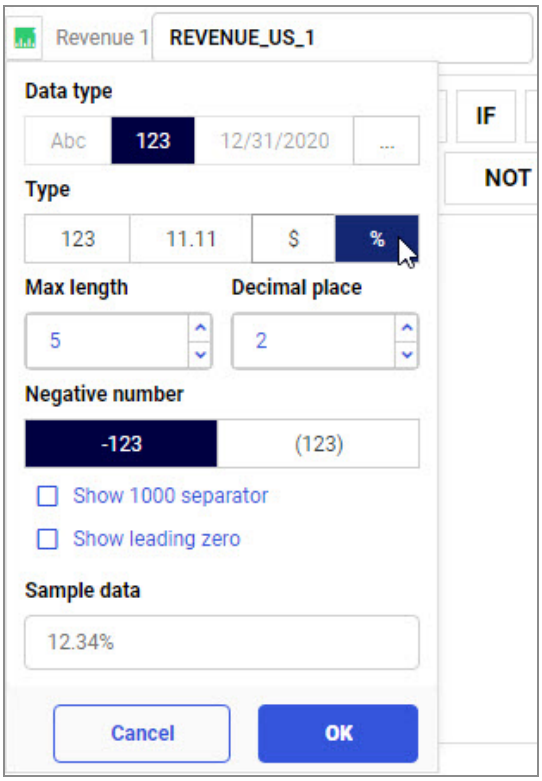
```
1 - ("Revenue"/"MSRP")
```

The following image shows this expression in the Calculator.

> **Note:** You can use the buttons in the Operator Selection area instead of typing some mathematical operators.

6. To show the discount percentage as percentage values instead of as a decimal, change the format of the calculation.

   Click the **Format** icon to open the Format dialog. Click the **Percent** Type option to change the field format to a percentage, as shown in the following image.

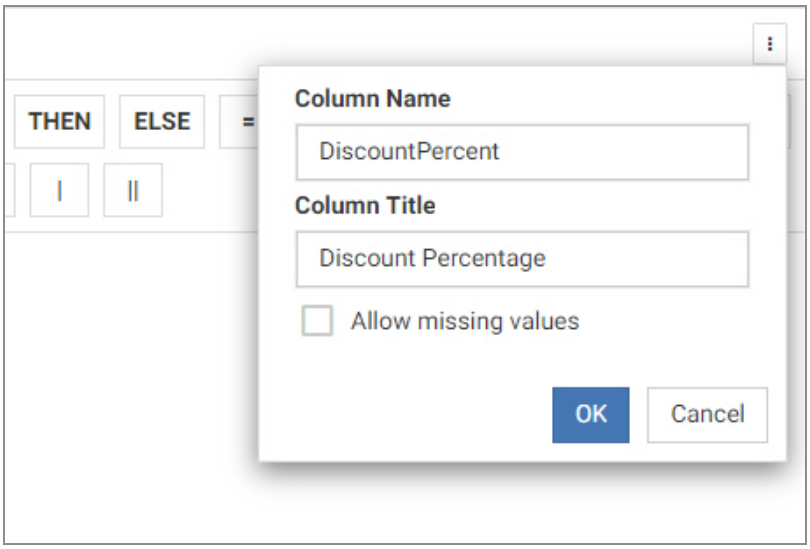


The percentage option automatically multiplies the values in the field by 100 to produce a percentage, so we do not need to perform this operation in the COMPUTE expression.

7. Click **OK** to accept the field format change.
8. Optionally, change the name of the COMPUTE field. It is assigned a default name based on where the COMPUTE field was created from. Unless you specify a different column title, this name appears in the bucket where the COMPUTE is used to and in your content.

   Double-click the field name next to the Format icon, and type a new name for the field.
9. Optionally, change the column title that displays for the COMPUTE field when it appears in your content.

   Click the **Field Properties** menu, and type a column title for the field, as shown in the following image.



10. Click **OK** to accept the new column title for the COMPUTE.
11. Click **Validate** to confirm that the COMPUTE is set up correctly.
12. Click **OK** to return to the calculator.

    If the validation indicated that there was an error, determine the cause of the issue and fix it.
13. Click **OK** to finish creating the new COMPUTE field.

    The field is added to the same bucket from which you created it. You can move it to a different bucket or delete the original field, Revenue, in this example, from which it was created.

    The following image shows a data grid that displays the Revenue and the calculated Discount Percentage for different product models.

Model	Revenue	Discount Percentage
2100	$4,434,062.45	4.56%
4200	$1,957,114.64	4.75%
Audio Technica ATHW5000	$9,341,397.65	4.50%
AudioVox D1788PN	$148,343.05	4.21%
Audiovox VE727	$274,014.46	3.91%
B00D7MOHDO	$2,514,622.50	4.49%
BCG34HRE4KN	$1,508,212.41	4.39%
BOSE AM10IV	$15,009,325.65	4.50%
BOSE AM16II	$9,749,839.35	4.41%
BOSE V-S2	$14,194,157.90	4.47%
BOSE V-S2-P	$10,898,704.95	4.38%
C6506B	$8,159,907.03	4.41%
C6506S	$8,072,776.93	4.45%
C6506W	$8,095,460.35	4.47%
Canon FS300	$14,280,110.10	4.50%
Canon HFR11	$9,462,118.35	4.39%
Canon XHA1S	$10,676,938.80	4.52%
DC390/37	$6,091,014.89	4.45%

Result

If you remove the COMPUTE field from your content, it is deleted permanently. COMPUTE fields are not stored in the Resources panel.

Edit an Existing Calculation

Once you have created a calculated field (DEFINE or COMPUTE), you can edit it. This allows you to revise the calculation and in the field so that you can achieve the results you expect.

Note: You cannot edit a calculated field that is already being used in a static or prompted filter. You may, however, delete the filter, edit the calculated field, then recreate the filter using the edited field.

Procedure

1. On the WebFOCUS Hub or WebFOCUS Home Page, locate a visualization with new content that uses a calculated field. Right-click it and click **Edit**.

   WebFOCUS Designer opens.

2. If you created a DEFINE field, the calculated field was added to the Field panel. Right-click the calculated field and click **Edit calculation**. If you created a COMPUTE field, or already added the DEFINE field to your content, you can also edit it from the bucket to which it was added.

3. Modify the calculated field using the calculator.

4. Click **Validate** to confirm that the calculated field is set up correctly.

5. If the validation indicated that there was an error, determine the cause of the issue and fix it.

6. Click **OK**.

   The revised field displays in the location from which you edited it.

Using Prefix Operator Aggregation Functions

You can use prefix operator aggregation functions to instantly apply a number of different aggregation operations to fields, unlocking significant insight into your data without writing your own calculations.

To apply a prefix operator, right-click a field in a measure bucket in a chart or report, point to **Aggregate**, and select one of the following options:

- **None.** Does not explicitly apply a prefix operator. When the Summaries display option is selected, the Sum aggregation is used. When the Counts display option is selected, the Count aggregation is used. When the Details or Details with counter display options are used, no aggregation is applied.
- **Sum.** Adds record values together for the selected field within each sort value.

- **Average.** Calculates the average of record values for the selected field within each sort value.
- **Count.** Provides the number of record values for the selected field within each sort value. If there are no missing values in the data source, the count aggregation returns the same value for every field.
- **Count distinct.** Provides the number of distinct record values for the selected field within each sort value.
- **Percent.** Calculates a percentage for each sort value based on the summed total value for the selected field.
- **Percent of count.** Calculates a percentage for each sort value based on total record count for the selected field.
- **Minimum.** Provides the minimum value for the field within each sort value.
- **Maximum.** Provides the maximum value for the field within each sort value.
- **Total**: Provides the total sum of all the values for the field.
- **Median.** Provides the median field value with each sort value.
- **Mode.** Provides the most common value of the field within each sort value.
- **Standard Deviation, Sample.** Provides the standard deviation of the field, within each sort value. Sample standard deviation uses Bessel's correction of *n-1* to calculate the standard deviation.
- **Standard Deviation, Population.** Provides the standard deviation of the field, within each sort value. Population standard deviation is calculated using *n* to represent the number of records in the request.
- **First value.** Available only when a dimension field is added to the measure bucket of a report. Retrieves the first value in the field from the data source.
- **Last value.** Available only when a dimension field is added to the measure bucket of a report. Retrieves the last value in the field from the data source.
- **Distinct.** Available only when creating reports with the Details and Details with counter display options. Displays only distinct values.
- **Total.** Available only when creating reports with the Details and Details with counter display options. Provides a grand total for the field. The Total operator (TOT.) can also be applied to a measure field in a header or footer to show the total value.

The operation is instantly applied to the field, indicated by a prefix in the measure bucket.

When you add a dimension field to a measure bucket in a chart, the only available aggregations are Count, Count distinct, and Percent of count. These options allow you to understand the distribution of values in dimension fields. When you add a dimension field to a chart as a measure, the Count aggregation is applied automatically in order to generate aggregated values for the chart.

In reports, numeric dimension fields are aggregated by default when added to the Summaries bucket, while alphanumeric dimension fields have the maximum aggregation prefix applied. When a dimension field is added to the Counts bucket, the count aggregation is applied. When a dimension field is added to the measure bucket of a report, the following aggregation options are available:

- Count
- Count distinct
- Percent of count
- Minimum
- Maximum
- First value
- Last value

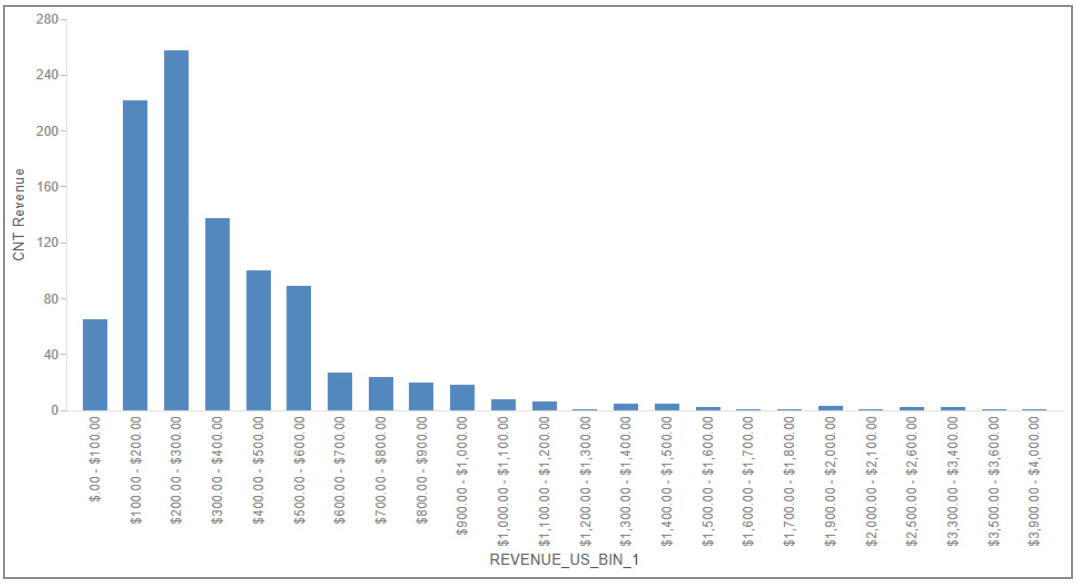
When using Counts display option, the Count prefix operator is used by default, but other operators, including Sum, can also be applied. These operators behave the same as when using the Summaries display option. When using the Details and Details with counter display options, measure values are not aggregated. As a result, measure fields in the Details and Details with counter buckets can only use the Distinct, Total, and Percent prefix operators.

You can use the same field multiple times in a chart or report with different prefix operators to enhance your understanding of your data set. For example, the report in the following image shows columns for average revenue and median revenue, which helps to understand the skewness of the data.

Product Category	AVE Revenue	MEDIAN Revenue
Accessories	$231.90	$169.00
Camcorder	$415.82	$299.99
Computers	$301.13	$280.00
Media Player	$454.12	$382.49
Stereo Systems	$345.64	$251.99
Televisions	$1,227.71	$799.99
Video Production	$376.91	$299.00

Since the average revenue values for each product category are all greater than the median revenue values, we can see that the data is skewed to the right. This means there are a higher proportion of records with lower than average revenue, and that the average revenue is brought up by some outlying high revenue values.

Similarly, you can use the Count prefix operator in combination with the binning feature to see the distribution of your data, such as in a histogram. To create a histogram, create a new chart, right-click a measure field in the Resources panel, point to **Bin values**, set a bin size and labeling option, and click **OK**. The bins appear as a field in the Dimensions area of the Resources panel. Drag the bin field into the sort bucket of your chart, such as the Horizontal bucket in a bar chart. Next, drag the same field for which you created your bins from the Measures area into the bucket used to aggregate measure data in the chart, such as the Vertical bucket in a bar chart. Finally, right-click that measure field, point to **Aggregate**, and click **Count**. The result is a histogram showing the distribution of values for the selected field, as shown in the following image.



Using Quick Transforms to Apply Analytical Functions to Data Fields

With quick transforms, you can easily apply the most commonly used analytical functions to measure fields in your content. This allows you to quickly apply a function to a field as you create content, expanding your options for incorporating aggregated data.

Quick transforms are robust and support a variety of functions. For example, you can perform a rolling or moving aggregation or correlation (both COMPUTEs) on a measure field. This makes it easy to perform the calculations you need to understand the distribution and patterns in your data with just a few clicks. To access these options, right-click a measure field in your chart or report, point to **Quick transform**, and then point to one of the quick transform options. Each quick transform allows you to configure how the calculation is performed. The following options are available:

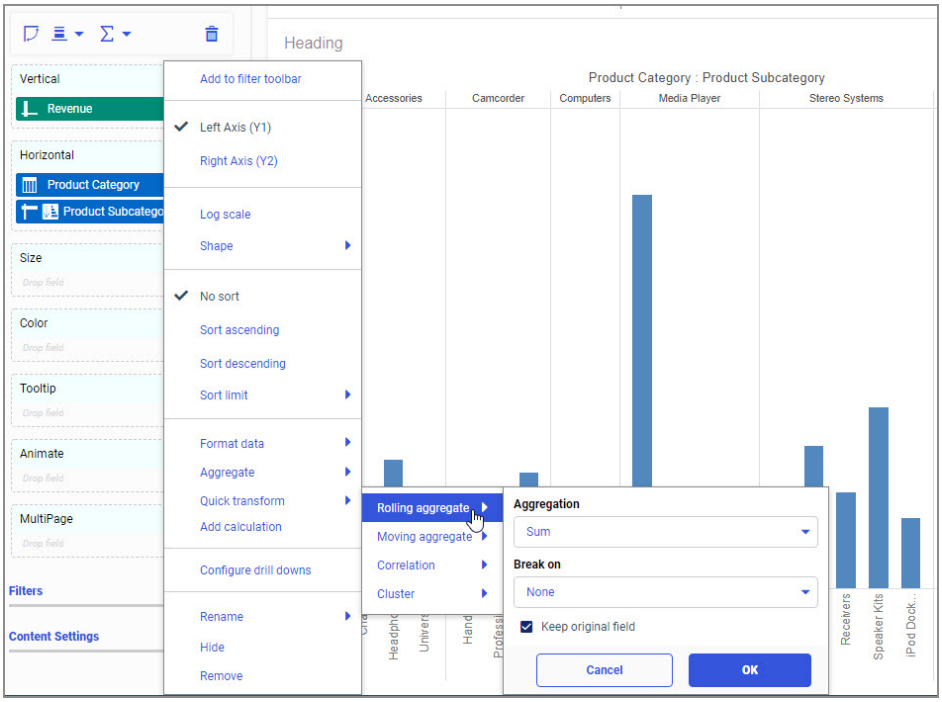
- **Rolling aggregate.** Reaggregates the total values in the request at each sort value.
- **Moving aggregate.** Reaggregates subtotal values in the request, for a fixed number of previous sort values, at each sort value.
- **Correlation.** Calculates the correlation coefficient between two numeric fields.
- **Cluster.** Partitions values into a specified number of clusters, based on the nearest mean value.

You can do this from the shortcut menu for a measure field added to a non-sorting bucket in a chart or report, such as the Vertical bucket in a bar chart. Placing a measure in the Horizontal bucket, which is used to sort a bar chart, creates entries for each underlying value. In this case, you do not have access to the Quick transform option.

Other examples include the use of the correlation function, which calculates the correlation between two numeric fields. This is often used to display how strongly two variables are related to each other. In addition, the cluster (KMEANS) function partitions observations into a specified number of clusters based on the nearest mean value. The goal of cluster analysis is to group, or cluster, observations into subsets based on their similarity of responses on multiple variables.

Quick transforms create post-aggregation (COMPUTE) virtual fields. A calculated value (COMPUTE) is evaluated after all of the data that meets the selection criteria is retrieved, sorted, and summed. This means that the quick transform calculation is performed using the aggregated values of the fields.

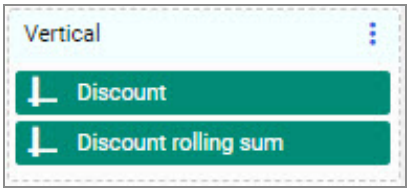
Performing a basic aggregation with a quick transform allows you to convert a field value from its raw state into a calculated field. With the Discount field, you can create a rolling sum that shows the cumulative sum of the field as it changes for each value in the chart. The Quick transform options are shown in the following image.



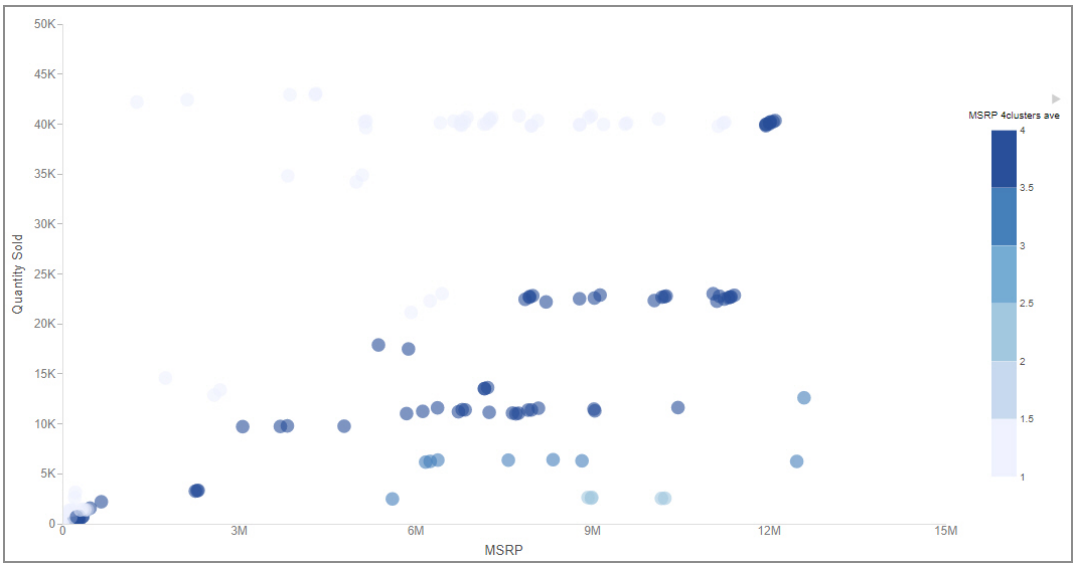
Note: You can perform multiple quick transforms using the same originating field.

Here, you can specify the type of aggregation (for example, Sum, Average, Count, and others) and indicate whether you want to keep the original field. The Keep original field option is selected, by default, if the bucket supports multiple measure fields, and serves the purpose of preserving the original field for other use in your chart. You can also choose to replace the field in favor of the transformed field, by deselecting this checkbox.

When you perform a quick transform on a field, a new, unique field is created and placed in the same bucket as the originating field, as shown in the following image.



The transformed field is now a COMPUTE, which is a post-aggregation calculated field. It is a separate field, labeled with the transformation that was applied. You can move the transformed field into a different measure bucket to make it easier to analyze your data. For example, the following image shows a scatter chart with Model values plotted based on Quantity Sold and MSRP values. The Cluster quick transform was performed on the MSRP field using the Average aggregation, creating four groups of models with similar average MSRP values. The cluster field has been moved into the Color bucket, making it easy to identify which cluster each model falls into.



Apply a Rolling Aggregation to a Report Using Quick Transforms

A rolling aggregate, or cumulative moving aggregate, is a cumulative aggregation of values. The aggregation is recalculated for each data record, allowing you to see totaled or recomputed values at various points in a chart or report.

You can add a rolling sum to a report that is sorted by year, quarter, and month values, allowing you to see the total sales data for different points in time. You can also break the rolling sum on a lower-level sort field, allowing you to view a separate rolling sum for different categories.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace with access to the wf_retail sample data, and select **wf_retail_lite.mas** as the data source.

   WebFOCUS Designer loads with options to create a single content item.

3. On the Content picker, select one of the report layouts as the content type.

4. With the Fields tab selected on the sidebar, on the Resources panel, in the Dimensions section, expand **Sales_Related** and **Transaction Date, Simple**, and double-click **Sale,Year**, **Sale,Quarter**, and **Sale,Month**, in order, to add them to the report in the Rows bucket.

5. On the Resources panel, in the Measures section, expand **Sales** and double-click **Revenue** to add it to the Summaries bucket.

   The report now shows Revenue by Sale Year, Sale Quarter, and Sale Month.

6. To see how the total revenue increased over time, add a rolling sum quick transform on the Revenue field.

   a. In the Summaries bucket, right-click the **Revenue** field, point to **Quick transform**, and then to **Rolling aggregate**.

   b. Leave the selected Aggregation option as **Sum**.

      You can select a different aggregation option to recalculate that aggregation at each row of the report.

   c. Leave the Break on option set to **None**. The rolling sum continues accruing throughout the entire report, without resetting.

   d. Leave the **Keep original field** checkbox selected, so that you still be able to see the Revenue values for each month.

   e. Click **OK**.

      The quick transform field, called Revenue rolling sum, by default, is added to the report. It displays the total revenue that has been accrued up to each month, as shown in the following image

Sale Year	Sale Quarter	Sale Month	Revenue	Revenue rolling sum
2014	1	1	$3,874,651.96	$3,874,651.96
		2	$3,592,608.63	$7,467,260.59
		3	$3,977,546.75	$11,444,807.34
	2	4	$3,648,111.77	$15,092,919.11
		5	$3,704,586.77	$18,797,505.88
		6	$3,694,435.21	$22,491,941.09
	3	7	$4,020,855.35	$26,512,796.44
		8	$4,126,310.80	$30,639,107.24
		9	$3,688,054.34	$34,327,161.58
	4	10	$4,794,720.40	$39,121,881.98
		11	$4,574,636.32	$43,696,518.30
		12	$5,268,550.91	$48,965,069.21
2015	1	1	$4,857,824.42	$53,822,893.63
		2	$4,595,194.63	$58,418,088.26
		3	$4,923,408.26	$63,341,496.52
	2	4	$4,422,610.34	$67,764,106.86
		5	$4,586,992.98	$72,351,099.84
		6	$4,856,111.47	$77,207,211.31
	3	7	$5,075,337.19	$82,282,548.50
		8	$5,133,075.08	$87,415,623.58
		9	$5,031,634.54	$92,447,258.12
	4	10	$5,826,745.45	$98,274,003.57
		11	$5,788,867.16	$104,062,870.73
		12	$6,043,161.45	$110,106,032.18

7. Add a new rolling sum quick transform field that breaks on the Sale Year field, thereby showing the accrued revenue at different points within each year.

   a. In the Summaries bucket, right-click the **Revenue** field, point to **Quick transform**, and then to **Rolling aggregate**.

   b. Open the Break on drop-down menu and select **Sale,Year**.

   c. Click **OK**.

      A new quick transform field, called **Revenue rolling sum Sale Year**, by default, is added to the report. Notice that the values continue increasing until the end of each year, at which point they reset and start accruing again, as shown in the following image

Sale Year	Sale Quarter	Sale Month	Revenue	Revenue rolling sum	Revenue rolling sum Sale Year
2014	1	1	$3,874,651.96	$3,874,651.96	$3,874,651.96
		2	$3,592,608.63	$7,467,260.59	$7,467,260.59
		3	$3,977,546.75	$11,444,807.34	$11,444,807.34
	2	4	$3,648,111.77	$15,092,919.11	$15,092,919.11
		5	$3,704,586.77	$18,797,505.88	$18,797,505.88
		6	$3,694,435.21	$22,491,941.09	$22,491,941.09
	3	7	$4,020,855.35	$26,512,796.44	$26,512,796.44
		8	$4,126,310.80	$30,639,107.24	$30,639,107.24
		9	$3,688,054.34	$34,327,161.58	$34,327,161.58
	4	10	$4,794,720.40	$39,121,881.98	$39,121,881.98
		11	$4,574,636.32	$43,696,518.30	$43,696,518.30
		12	$5,268,550.91	$48,965,069.21	$48,965,069.21
2015	1	1	$4,857,824.42	$53,822,893.63	$4,857,824.42
		2	$4,595,194.63	$58,418,088.26	$9,453,019.05
		3	$4,923,408.26	$63,341,496.52	$14,376,427.31
	2	4	$4,422,610.34	$67,764,106.86	$18,799,037.65
		5	$4,586,992.98	$72,351,099.84	$23,386,030.63
		6	$4,856,111.47	$77,207,211.31	$28,242,142.10
	3	7	$5,075,337.19	$82,282,548.50	$33,317,479.29
		8	$5,133,075.08	$87,415,623.58	$38,450,554.37
		9	$5,031,634.54	$92,447,258.12	$43,482,188.91
	4	10	$5,826,745.45	$98,274,003.57	$49,308,934.36
		11	$5,788,867.16	$104,062,870.73	$55,097,801.52
		12	$6,043,161.45	$110,106,032.18	$61,140,962.97
2016	1	1	$7,528,276.32	$117,634,308.50	$7,528,276.32

Result

Using this report, you can see when certain revenue goals and thresholds were met.

Apply a Moving Average to a Chart Using Quick Transforms

You can use a rolling or moving average to smooth out the data in your chart or report, making it easier to identify trends and patterns.

While, a rolling aggregate is a cumulative aggregation of all of the values in a chart or report, a moving aggregate is a cumulative aggregation that is performed on a limited selection of the most recent values. As the moving aggregate proceeds through the sequence of values in your chart or report, earlier values are gradually discarded from the calculation as they fall outside the scope of the moving aggregation. A moving average,

therefore, is an average that is recalculated at each value for that value and a specified number of prior values.

To create a moving average based on a measure field in your content:

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace with access to the wf_retail sample data, and select **wf_retail_lite.mas** as the data source.

   WebFOCUS Designer loads with options to create a single content item.

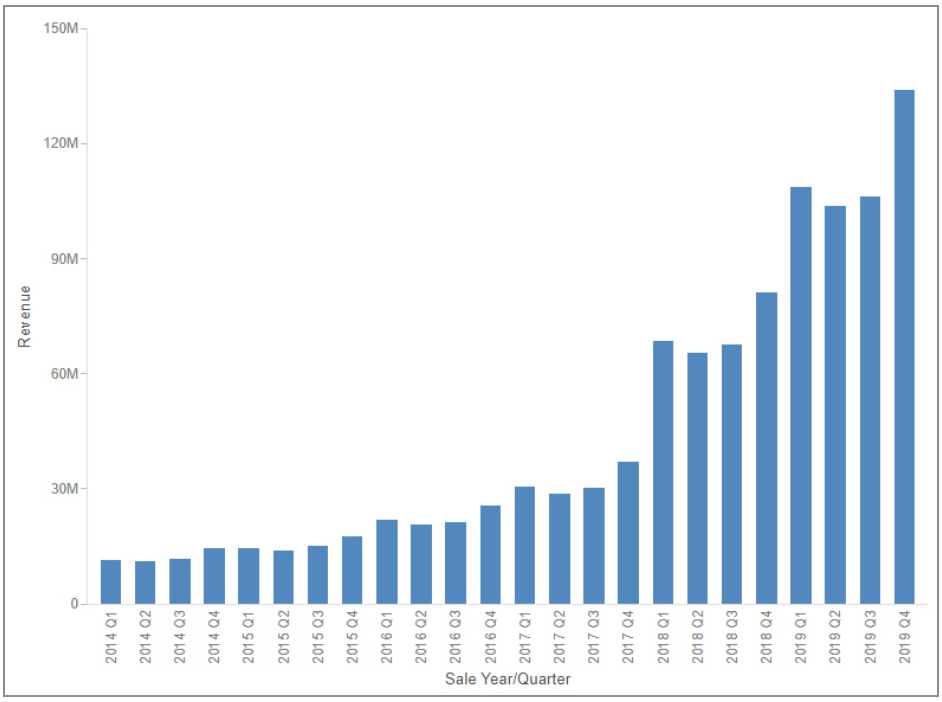
3. Use the Content picker to change the chart type to a vertical side-by-side bar chart.

   The moving average is added to the chart as a second measure, and since we want to compare it directly to the non-transformed field, the bars should be aligned side-by-side instead of stacked.

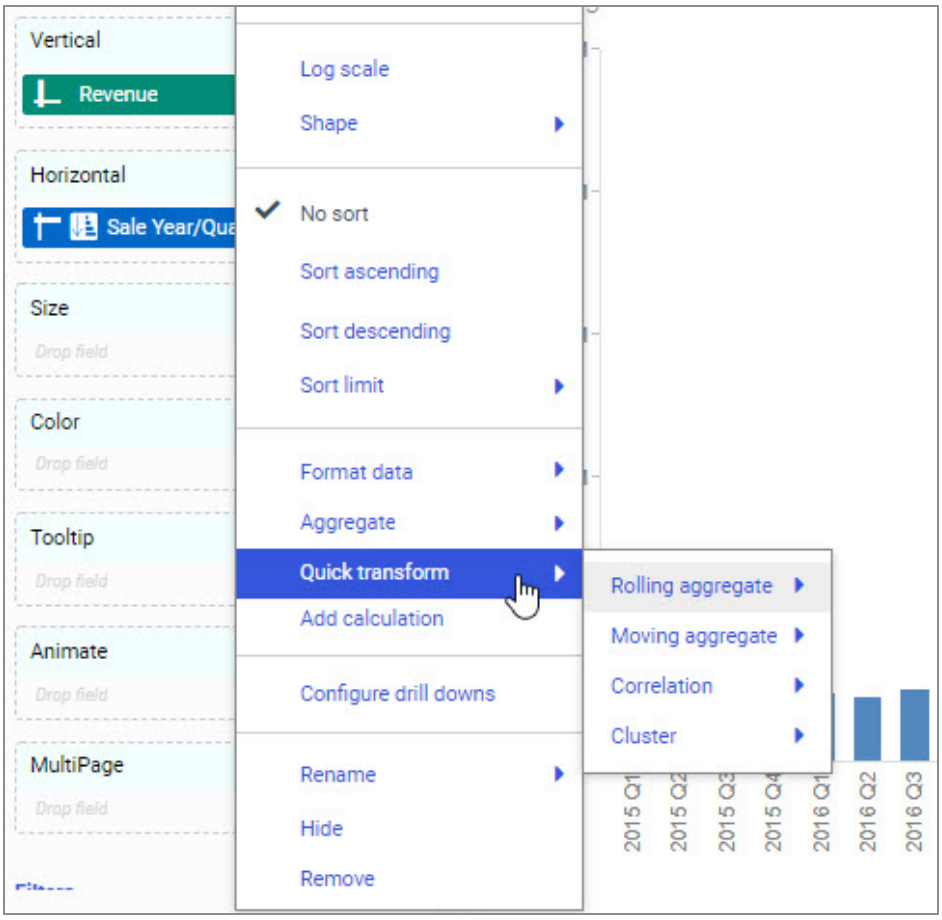
4. On the Resources panel, in the Dimensions section, expand **Sales_Related** and **Transaction Date, Components**, and double-click **Sale,Year/Quarter** to add the Sale Year/Quarter field to the chart in the Horizontal bucket.

5. On the Resources panel, in the Measures section, expand **Sales** and then double-click **Revenue** to add the Revenue field to the Vertical bucket.

   The result is a bar chart showing revenue for each quarter of each year, as shown in the following image.



6. Right-click the measure field in the Vertical bucket, in this case, Revenue, and point to **Quick transform**, as shown in the following image.



7. To add a moving average to the chart, point to **Moving aggregate** and:

   a. From the Aggregation menu, select **Average**, which is the default. You can alternatively create a moving sum, moving count, and more.

   b. Since there is only one sort field in the chart, the Break on option is not available.

      If we had added a second field to the Horizontal bucket, you would be able to select a field on which to break the moving average.

      The default selection is None. When **None** is selected, the moving aggregation continues for every value, and never resets. If you have multiple sort fields in the chart, and you select a field to break on, the aggregation starts over for each new value of that field. You cannot break on the lowest sort field or the only sort field, since this would cause the rolling aggregation to reset on each value.

c. Set the Look back value to **8**. The Look back value determines the number of past values to include when evaluating the moving aggregation. In this case, we use the last two years of data to calculate the moving average.

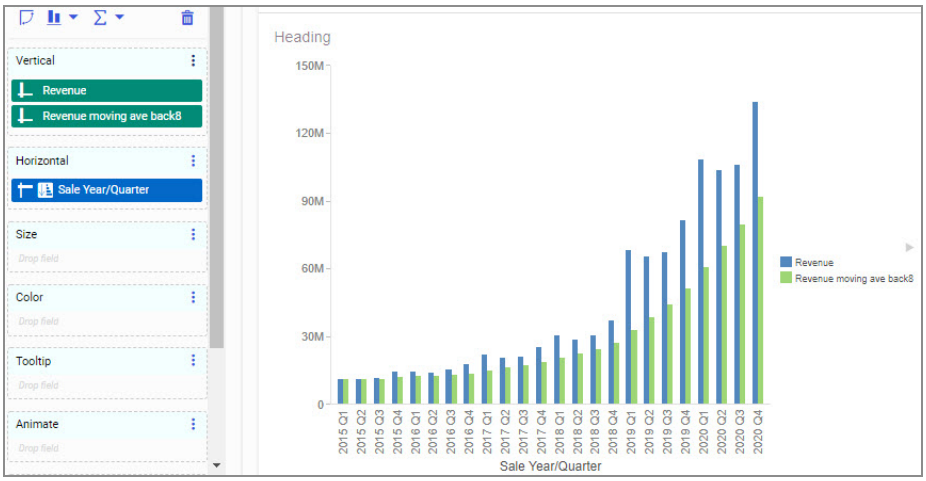
   Use a higher Look back value to make a smoother moving average. Using a lower value results in a less smooth moving average, but makes the moving average more responsive to changes to the data.

d. Leave the Keep original field checkbox selected. This checkbox controls if the original field on which you are basing the quick transform is retained in the bucket. This checkbox is selected, by default.

   If you leave it checked, both the original field and the new calculated field share the bucket from which the quick transform was created, if possible. If you do not want to keep the original field, you can replace the field with the quick transform field by deselecting the box. Single-field buckets, such as Size or Color, always replace the original field, and do not provide this option.

8. Click **OK**.

   The field is placed in the measure bucket and displays in your content, by default. The legend is also updated to reflect this new field, as shown in the following image.



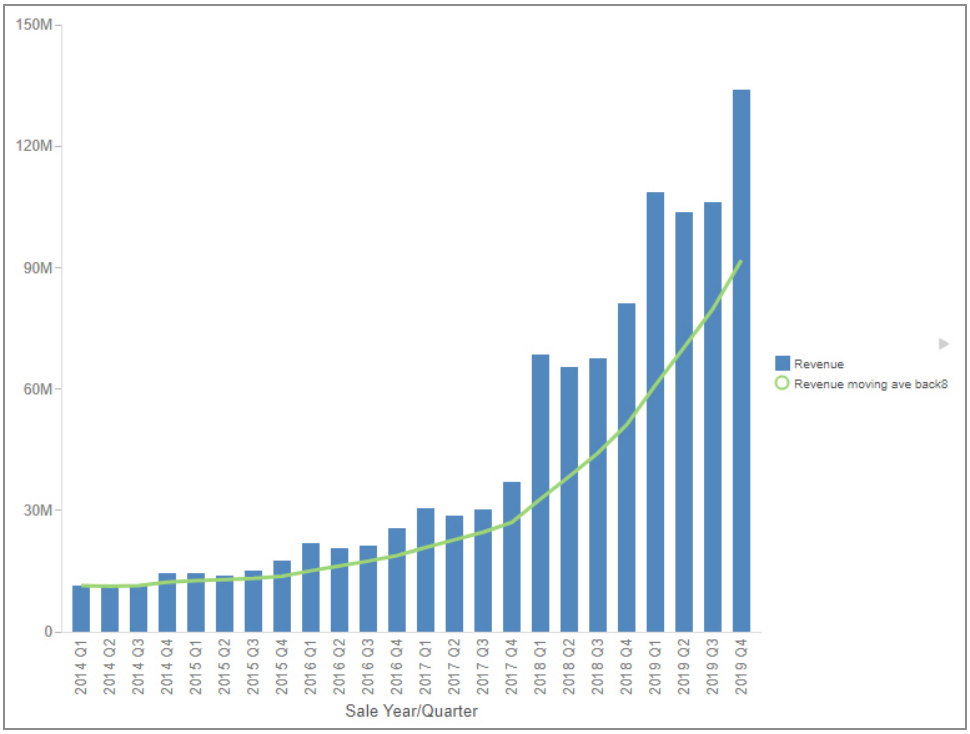
   Notice that since we used a fairly high Look back value of 8, the moving average bars have a smooth growth that allows us easily identify a general pattern in the data, but do not increase quite as quickly as the actual revenue values.

9. Optionally, you can change the moving average fields to display as a line instead of bars, more clearly differentiating the moving average from the actual revenue values.

   In the Vertical bucket, right-click the moving average field, point to **Shape**, and click

Line.

The moving average now displays as a line, as shown in the following image.



Note:
For information on the PARTITION_AGGR functions, see the *ibi™ WebFOCUS® Developing Reporting Applications* technical content.

Using Dynamic Grouping for Dimension Field Values

Dynamic grouping allows you to create groups of elements based on the field data type that you select. For example, you may have a field with US state names, but no field for US regions. Using the dynamic grouping functionality, you can create groups for different regions for use in a content item without editing the data source. You create one group that combines state name values like Maine, New Hampshire, and Massachusetts into a New England group, states such as New York, New Jersey, and Pennsylvania into a Mid-Atlantic group, and so on. You can even add the extraneous, remaining values into an Other group automatically, if you do not think they fit into another defined group.

Note: The Create Group option is only available for dimension fields of non-numeric format or attribute.

You can also specify multiple, unique groupings in the same session. For example, you might want to group the data to indicate groups or products, or specific regions.

Note: If you want to exclude a specific data element from your analysis, you can use the filter functionality.

The grouping that you specify is applied and this new group then replaces the original field that you selected in the Query pane. The name that you specify when creating the group is reflected in the Query pane.

The process of dynamic grouping creates a Define field, which can then be used in other reports or charts in the same visualization. When creating a single content item, dynamic grouping also supports Auto Drill, enabling you to drill through the hierarchy of your data just like any other data field.

Note: When working with Reporting Objects, Dynamic Grouping is not supported.

Create a Dynamic Group

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Resources pane, with **Fields** selected on the sidebar, right-click the data field for which you want to apply dynamic grouping.

> **Note:**
> You can use the dynamic grouping functionality on non-numeric dimension fields only.

4. Click **Group values**.

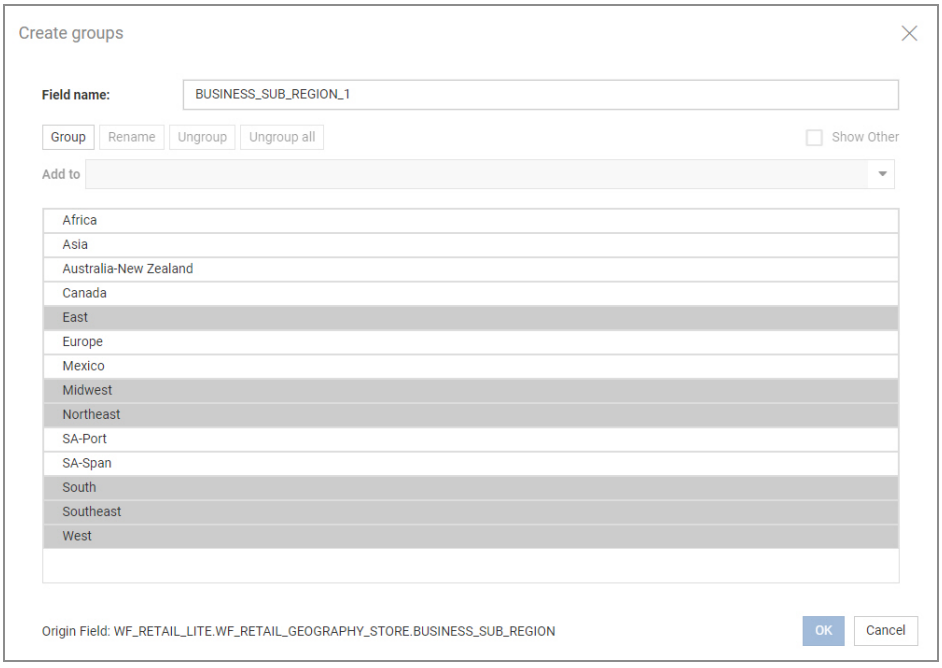
   The Create Groups dialog displays.

5. In the Field text box, optionally type a name for the new group field.

> **Note:**
> The fully qualified field name is displayed as the Origin Field at the bottom of the Create Groups dialog. The display of the fully qualified field name is particularly useful when renaming or editing a group, as it identifies the data source followed by the hierarchical location of the field within a data set. For example, WF_RETAIL_LITE.WF_RETAIL_PRODUCT.BRAND.

6. Create a group of values in one of the following ways:

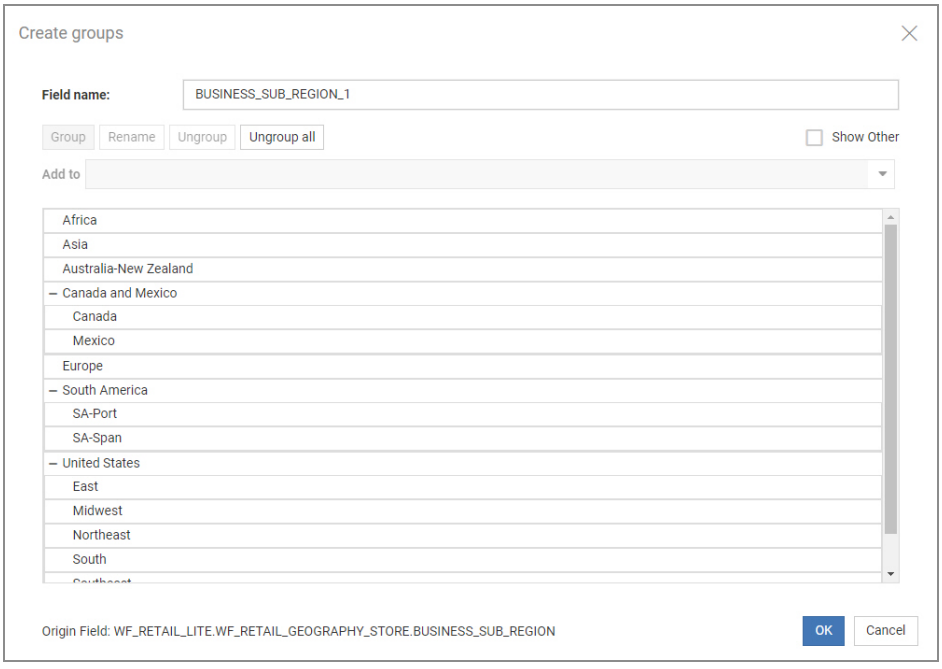
   - Use Ctrl + click to select more than one value, as shown in the following image, then click **Group**.



- Drag one value onto another value. The two values are grouped.

7. Optionally, double-click the group title or select a group and click **Rename**, and then type a new name for the group.
8. Optionally, add more values to the group that you just created using one of the following methods:
   - Select one or more values, open the Add to menu, and select a group to add the values to.
   - Select one or more values and drag them into a group.
   - Drag the group onto a single, ungrouped value. The value is added to the group.
   - If you have multiple groups, drag one group into another group to merge them. The name of the target group is retained for the merged group.

   These methods can also be used to move a value from one group to another group.
9. Optionally, create additional groups using the methods in step 7, as shown in the following image.



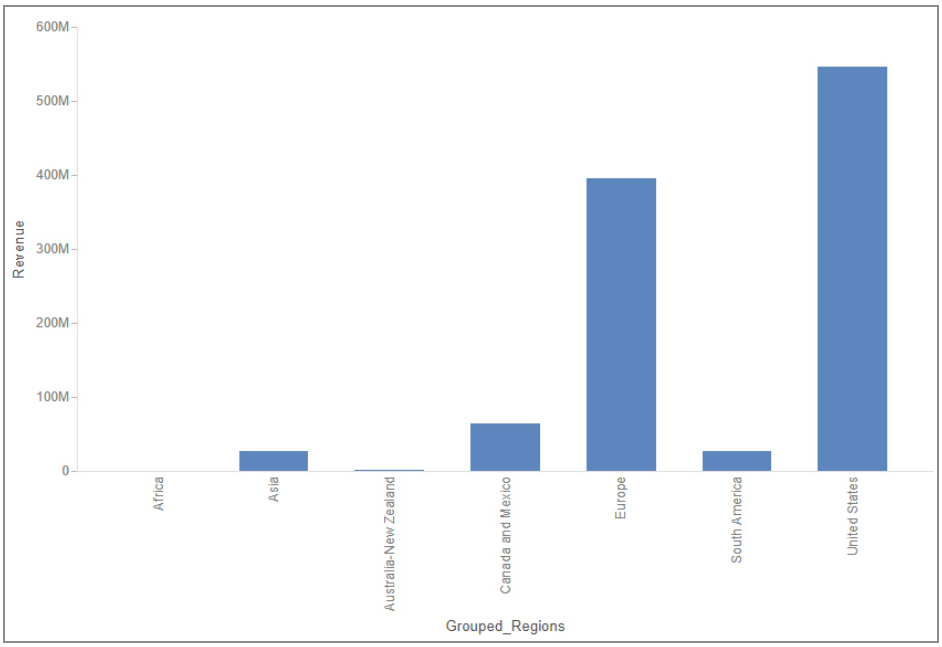
10. Optionally, to ungroup values, click a group and then click **Ungroup**. Click **Ungroup all** to disband all groups.

11. Optionally, click **Show other** to add all remaining non-grouped values to an Other group.

> **Note:**
> If you add all values to the Other group, all groups, including the Other group, are disbanded. You must have at least one group for the Other group to be available.

12. Click **OK**.

    Your grouped data is displayed as a new field in the Resources panel. If it is not immediately visible, you can use the search feature on the field list to find it. From there, you can add the grouped field to your content, as shown in the following image.



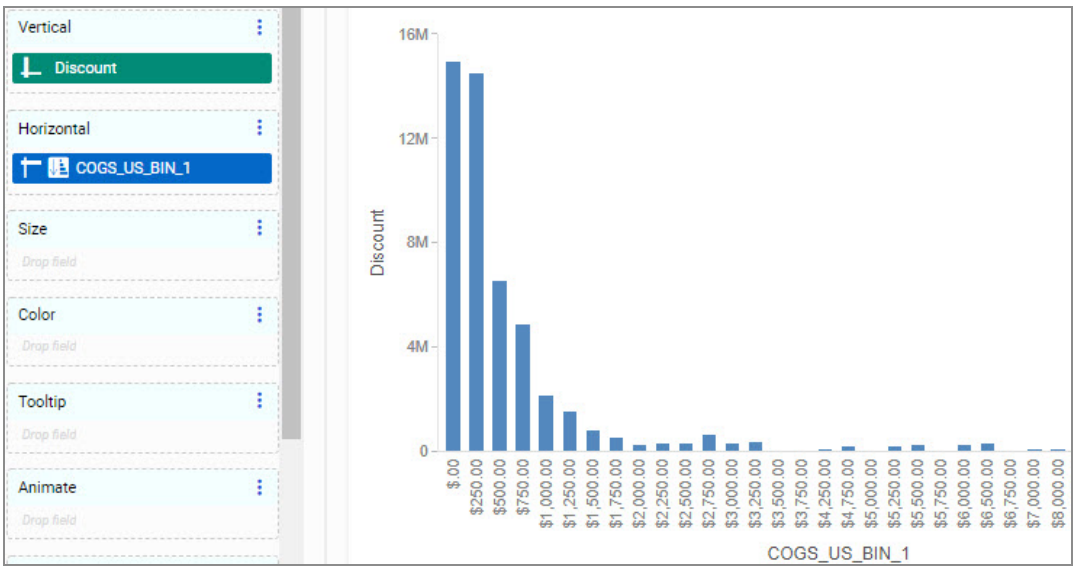
    To edit the grouped field, right-click it in the Resource panel and click **Edit group values**.

Creating Numeric Ranges With Binning

In WebFOCUS Designer, bins are used to group numeric values by the increment you specify. This allows you to view large amounts of data across measures or calculated measures, enabling you to analyze trends and identify outliers. Data binning also allows

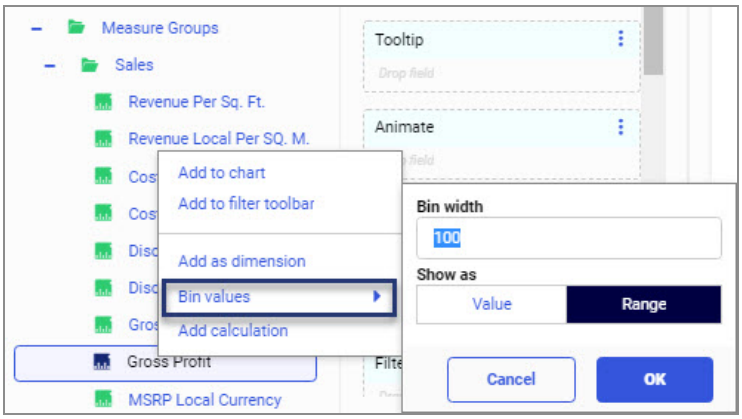
you to view your data as part of a larger group, displaying ranges of that data in manageable, visible bins.

For example, you might want to analyze Cost of Goods Sold against Discount to understand how discounts impact the cost of goods. First, you add the Discount measure to the Vertical field container. These values are used as a guide for the comparative, grouped content in the bin. If you apply a bin width value of 250 to the Cost of Goods measure, your data values are grouped into ranges of 250 (for example, 0 - 250, 250 - 500, 500 - 750). Finally, you add the new binned dimension field (generated by the bin process) to your chart. Your chart now displays the binned values against the Discount measure, as shown in the following image.



As you can see in this example, there is a direct correlation between Cost of Goods and Discount, with the smaller cost records values (0 - 250) constituting more of the discount amount. From this example, it is evident that a large portion of total discounts is given for lower cost items. In this case, binning has given you the insight into the frequency distribution of values in your data.

Bins are created on a numeric measure field (for example, Gross Profit), as shown in the following image.



Examples of numeric measure fields include Gross Profit or Discount. Once you create a bin, a new dimension field is automatically created, allowing you to plot values based on your bin specifications.

You can create or edit bins using the same options. On the Resources panel, right-click a field and click **Bin values**, or right-click a binned field and click **Edit bin values**. This opens a shortcut menu with the following options:

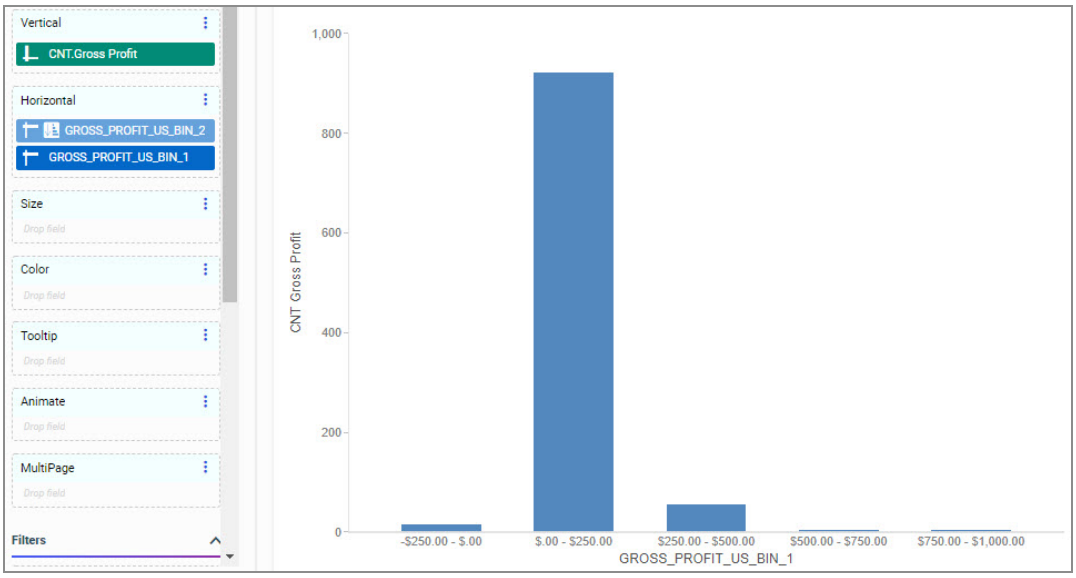
- **Bin width.** A standard text box that accepts any number greater than 0.
- **Show as.** Identifies the bin label type.
    - **Value.** Displays the alphanumeric representation of the numeric value containing the minimum value (FLOOR) of each bin. The format should be set to the data format of the source field.
    - **Range.** Displays the alphanumeric string representing the minimum and maximum range for each bin. The format should be set to the data format of the source field.
- **OK.** Creates a new dimension field based on the bin options that you selected. This dimension field is automatically added under your dimensions in the Fields tab.
- **Cancel.** Closes the shortcut menu and cancels the changes.

The following image displays bin values and bin ranges for the DEALER_COST field, using a bin width of 1000. It also shows how the data falls into the value and range properties.

PAGE 1		
DEALER_COST	BINVALUE	BINRANGE
2,626	2,000	2,000 - 2,999
2,886	2,000	2,000 - 2,999
4,292	4,000	4,000 - 4,999
4,631	4,000	4,000 - 4,999
4,915	4,000	4,000 - 4,999
5,063	5,000	5,000 - 5,999
5,660	5,000	5,000 - 5,999
	5,000	5,000 - 5,999
5,800	5,000	5,000 - 5,999
6,000	6,000	6,000 - 6,999
7,427	7,000	7,000 - 7,999
8,300	8,000	8,000 - 8,999
8,400	8,000	8,000 - 8,999
10,000	10,000	10,000 - 10,999
11,000	11,000	11,000 - 11,999
11,194	11,000	11,000 - 11,999
14,940	14,000	14,000 - 14,999
25,000	25,000	25,000 - 25,999

Note: Bin fields that display ranges, using the Show as Range option, use a character field format, while bin fields that display floor values, using the Show as Value option, use a numeric field format. As a result, when displaying ranges, bins with negative numbers display after bins with positive values. This is due to the sort sequence used for character fields. On the other hand, when displaying floor values, bins are sorted into numeric order, so negative value bins display before bins with positive values.

Therefore, if the measure field that you are binning includes negative values, it is recommended to select **Value** as the Show as option. Alternatively, you can display ranges in numeric order by using a bin with values as a hidden, higher-level sort field and adding the bin with ranges below it on the same axis. For example, if creating a vertical bar chart, create a value bin field and a range bin field, both with the same width. Add the value bin field and then the range bin field to the Horizontal bucket, then hide the value bin field. The ranges are now in the correct order, as shown in the following image.



Editing an Existing Bin

Once you have created a bin, you can edit it. This gives you the flexibility of changing the size of the bin or other related parameters. Changes to the bin values appear in real time.

You can edit an existing bin from the Data panel or if you have placed the bin in a bucket, by right-clicking the bin and selecting **Edit bin values**.

Note: If a bin field is being used in a calculated field or in a filter, you cannot change the bin label type.

Create a Histogram Using Bins

A histogram is a chart, usually in a bar chart format, that displays the frequency distribution of values in your data by displaying the count of values in different ranges. The count aggregation and bins should be applied to the same field to show the frequency distribution effectively.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then

click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. If the default content type is not a bar chart, select a vertical bar chart option from the Content picker.

4. With the Fields tab selected on the sidebar, on the Resources panel, under Measures, select a numeric measure field and place it in the Vertical bucket. You can also double-click the field, or right-click it and select **Add to chart**.

5. Right-click the measure field in the Vertical bucket, point to **Aggregate**, and click **Count**.

   The prefix CNT. is added to the front of the field name. The vertical axis now represents the frequency of values of the selected measure field, rather than summed values.

6. On the Resources panel, under Measures, right-click the same measure field and point to **Bin values**.

7. Specify a numeric value in the Bin width field. For example, using the numeric value 500 creates bins that group values of 500 together.

   Keep in mind the overall range of values in the field that you are binning. Fields with smaller variance work best with smaller bins, while fields with large variance work best with larger bins.

8. Optionally, select a Show as option. Range, which is the default, shows the minimum and maximum value for each range, while Value shows only the minimum value.

9. Click **OK** to generate the bins for the selected measure field.

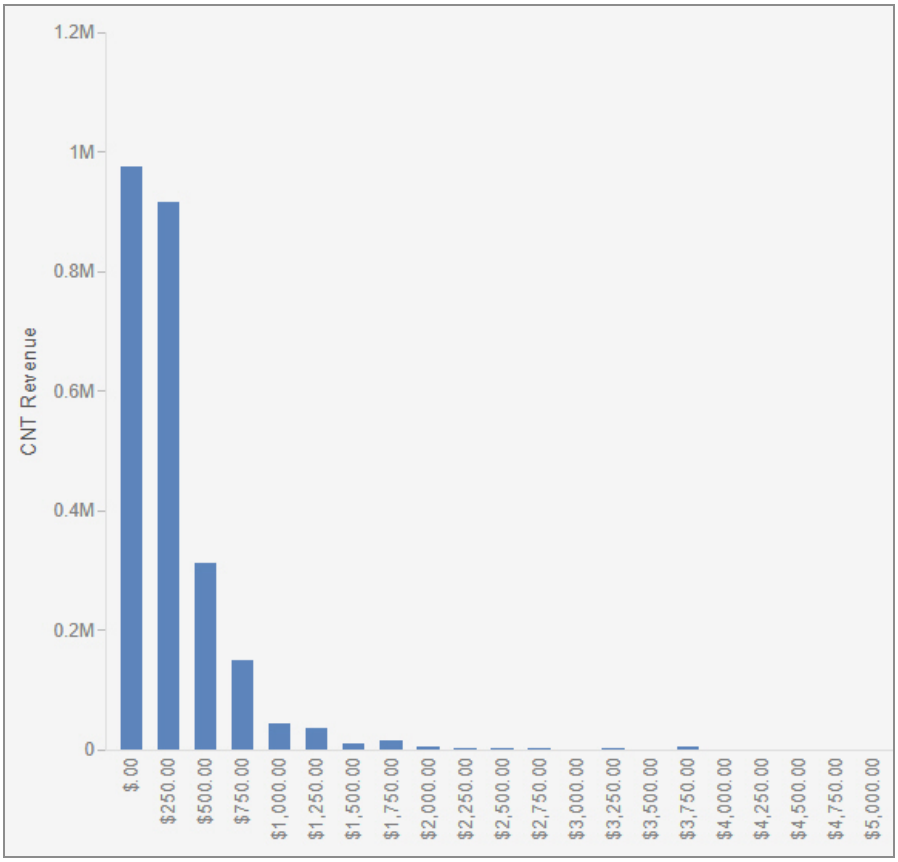
   > **Note:**
   > The binned measure is added to the Resources panel as a new dimension field that you can use in your chart.

10. From the list of dimension fields, locate the field that is suffixed by _BIN_1 (for example, REVENUE_US_BIN_1).

> **Note:**
> The binned field is placed under Dimensions on the Resources panel. If you are viewing these fields using the Folder view, it is available under a folder with the same name used under Measures. You can also use the search feature to locate the new dimension field if needed.

11. Add this new dimension field to the Horizontal field container.

    The bins are displayed in your chart. Each bar represents a range of values, and the height of each bar represents the number of records that fall into each range, as shown in the following image.



    From the image above, we can see that sales falling into the first two bins, up to $500 in revenue, were the most frequent.

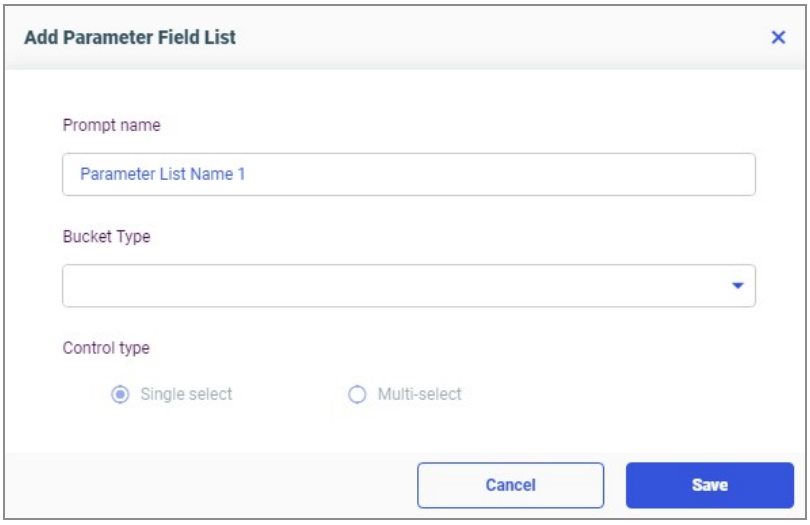
12. Optionally, to edit the bin width to produce more or fewer bins, or to toggle the bin label type between ranges and values, right-click the bin field in the Horizontal bucket and point to **Edit bin values**. You can then change the bin settings and click

OK to apply them.

Enabling Field Selection at Run Time With Field List Parameters

Field list parameters are a powerful tool that allows you to provide users with a selection of fields that they can use at run-time to build charts and reports within a framework that you provide. Field list parameters can be added to buckets in place of fields in a chart or report. At run time, users select the fields that they want to display, giving them the power to choose the data that is represented by and displayed in your content. You can complement these field list parameters with fields that always appear in your content, providing a mix of customizable and static content. Field list parameters can be single select or, if the bucket allows multiple fields, multi-select, providing even more flexibility. Field list parameters are a key component of InfoApps, which are pages in which users can select the fields that display.

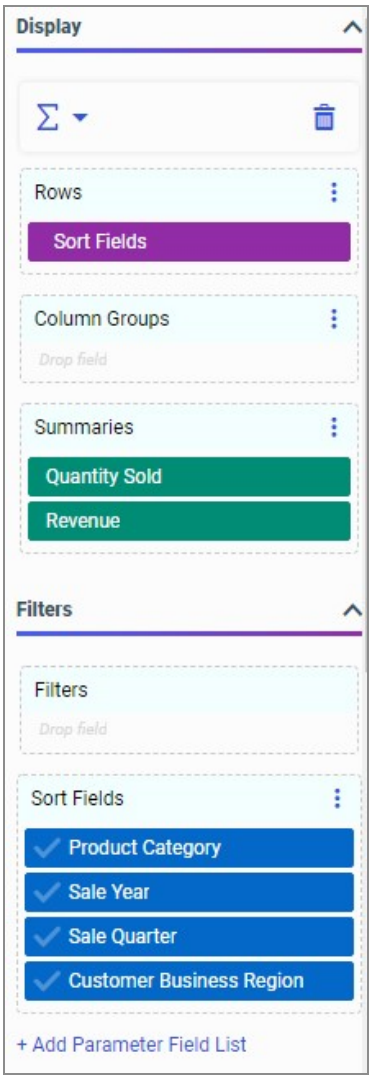
When you add a field list parameter, it becomes a field container into which you can add one or more measure and dimension fields. Create a parameter by clicking **Add Parameter Field List** on the Settings tab. The Add Parameter Field List dialog opens, as shown in the following image.



Here, you can supply a prompt name, used as a label for the field list control and bucket, choose which bucket the field list selections should populate, and determine whether the field list parameter is single select or multi-select. Multi-select field list parameters are not available for charts, so when creating a chart, the Control type option is locked to **Single**

select. When you click **Save** to create the parameter, a field list parameter placeholder appears in the location selected from the Bucket Type menu, and a new field list parameter bucket appears below the Filters bucket. The placeholder is a purple color to distinguish it from regular measure and dimension fields.

To add fields to the field list parameter, drag them into the new field list parameter bucket. Field list parameter buckets only accept the types of fields that can be added to the bucket that the field list parameter has been added to. For example, if the field list parameter was created for the Location bucket, only fields with an assigned geographic role can be added to it. The following image shows the buckets for a report, in which the Product Category, Sale Year, Sale Quarter, and Customer Business Region fields have been added to a field list parameter, and the parameter itself has been added to the Rows bucket.



The order of the fields in each field list parameter bucket is the order in which they appear in the field list filter prompt when you run your content. Click the checkbox icon next to

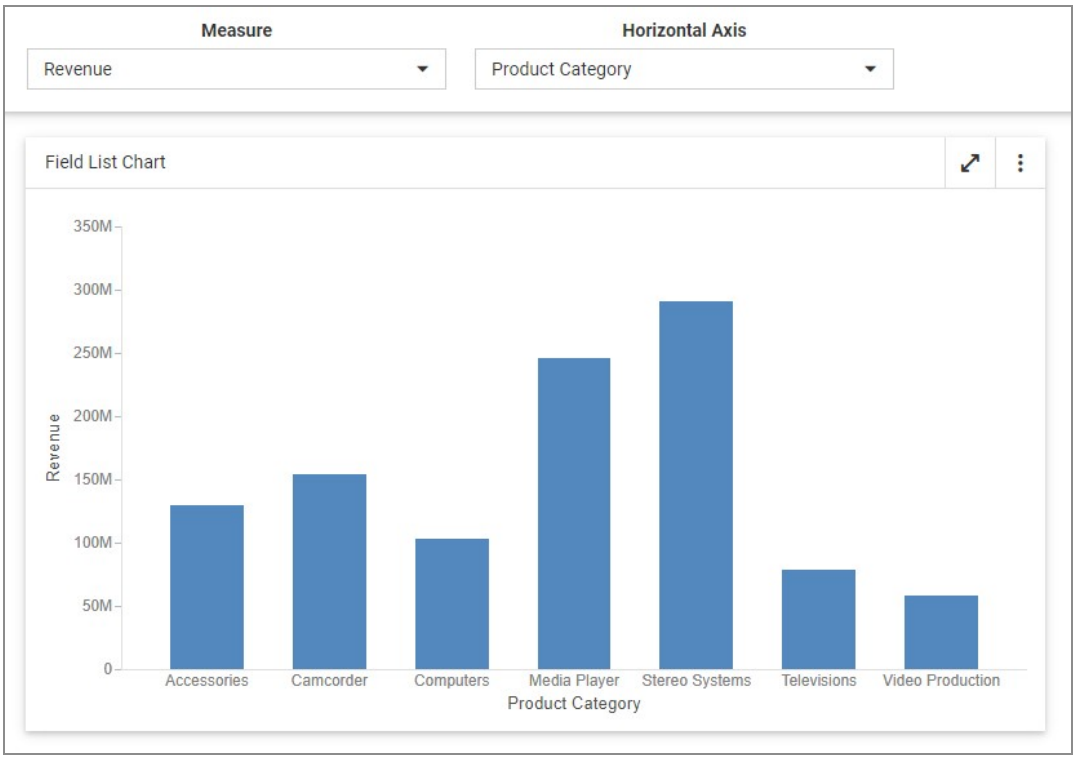
the field name in the field list parameter bucket to set default values for each field list control. For field list parameters with a Control type of **Multi-select**, you can choose to have multiple fields selected by default. If parameter prompting is set in your environment to run content with default values without showing autoprompt, then when you run content in which default values have been set for all field list parameters, you will not be prompted to select fields for your content.

You can right-click a field in a field list parameter bucket to make some simple modifications to it. You can rename a measure or dimension field to change the name that it uses in the field list control when the content is run. You can also right-click a measure field in a field list parameter bucket and point to **Aggregate** to change the aggregation of the field. This allows you, for example, to make both summed revenue and average revenue fields available in the field list.

To edit or delete a field list parameter, click the ellipsis menu on the field list parameter bucket, and click **Edit** or **Delete**. You can also delete a field list parameter by pointing to it in the standard chart or report bucket to which it was added, and clicking the X that appears when you point to it. To remove a field from a field list, point to the field in the field list parameter and click the X, or right-click it and click **Remove**. To remove all fields from the field list, click the ellipsis menu for the field list parameter bucket and click **Clear**.

You can create multiple field list parameters, and add them to buckets together with regular fields that will always appear in your content, allowing you to have a mix of permanent and user-selected fields in your charts and reports. Just like regular fields, field list parameters can be reordered relative to other fields and field list parameters in a bucket, giving you some control over the sort order of your content, even when user-selected fields are used. Parameters can be added to any bucket in a report, and in any chart bucket, with the exception of the Multi-graph bucket.

When you run a chart or report with field list parameters, you can select the fields with which each one should be populated using standard filter controls for alphanumeric values. If the chart or report is run stand-alone, these controls are presented in the autoprompt interface. If the chart or report is added to an assembled page, you can create filter controls for each field list parameter to allow users to select fields for each one. The following image shows a page with controls for multiple field list parameters.



When adding content with multi-select field list parameters to an assembled page, changing the filter control type to a double list control, or to a checkbox control with the **Allow reordering** option enabled, makes it possible to reorder the selected fields at run time. This provides even more control over the display of your content when run in a page.

Note: Field list parameters are unavailable in pages created with new content. Charts and reports with field list parameters cannot be converted into a page. To add content with field list parameters to a page, create an assembled page using the **Assemble Visualizations** option on the plus menu of the WebFOCUS Home Page.

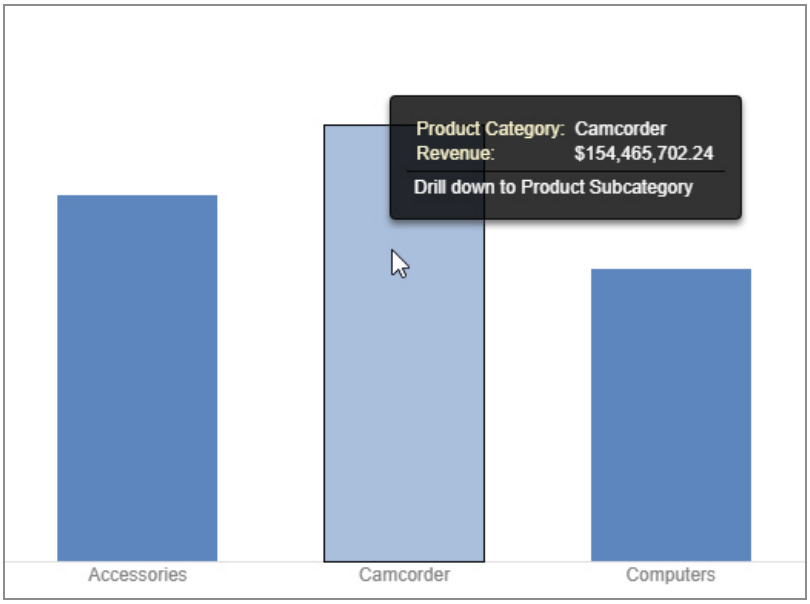
Enabling Hierarchical Drilling in ibi WebFOCUS Designer With Auto Drill

Auto Drill enables you to navigate through different levels within the dimension hierarchy of your data source. This allows you to review underlying data for a particular area, and move through the structure of your data source, based on your informational needs.

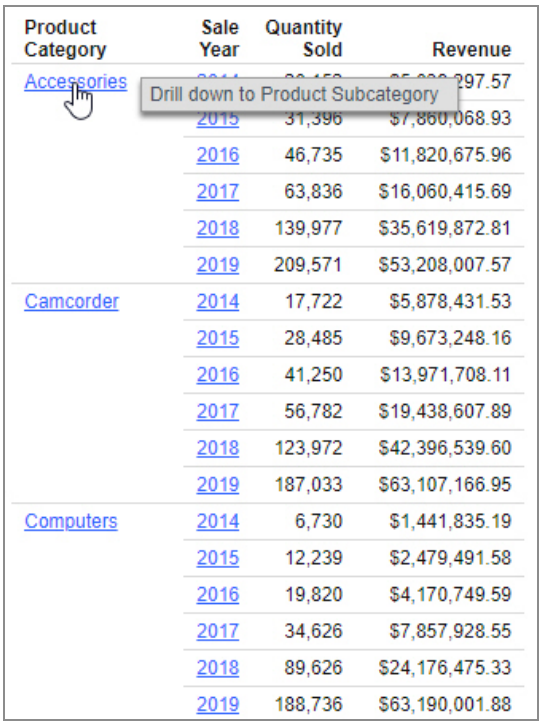
Auto Drill can be enabled for stand-alone content items. If you convert a chart or report with Auto Drill to a page with new content, a warning appears, alerting you that Auto Drill functionality is not carried over. Auto Drill is functional in content added externally to an assembled page. To enable Auto Drill, in the Content section of the Settings tab, on the Properties panel, select **AutoDrill**. Auto Drill is not available if your chart or report does not contain fields that are part of a hierarchy.

Once you have enabled Auto Drill, you can develop your report or chart and run it to activate the hyperlinks that Auto Drill creates. This enables you to navigate up or down through the related hierarchy of your data source by clicking the links that display.

In a chart, Auto Drill links are available from the tooltip that appears when you point to a section of a chart, as shown in the following image.

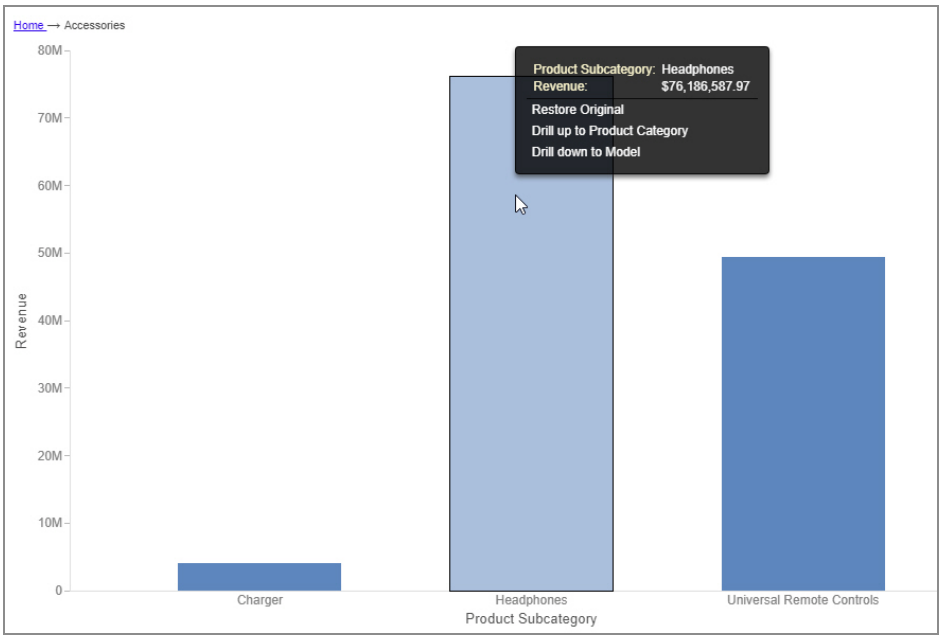


In a report, Auto Drill links are available when you click a data value hyperlink. The values are styled as hyperlinks to indicate that you can drill into them, as shown in the following image.



When you click a hyperlink, the option to drill up or drill down displays, depending on where you are in the hierarchy of your data. You can then select one of these options to begin navigating your data. For example, if you have Product,Category in your hierarchy, you would be able to drill down to Product,Subcategory. When you drill down, you can subsequently drill back up to the originating dimension sort field. If you have selected a data source that has multiple levels and your report or chart uses a component in the middle of the hierarchy, both the Drill up and Drill down options display. Once you have started navigating your data using the Drill up and Drill down options, the Restore Original option displays, enabling you to start your data analysis over by re-running the original Auto Drill request.

The drill up and drill down options are shown in the following image.

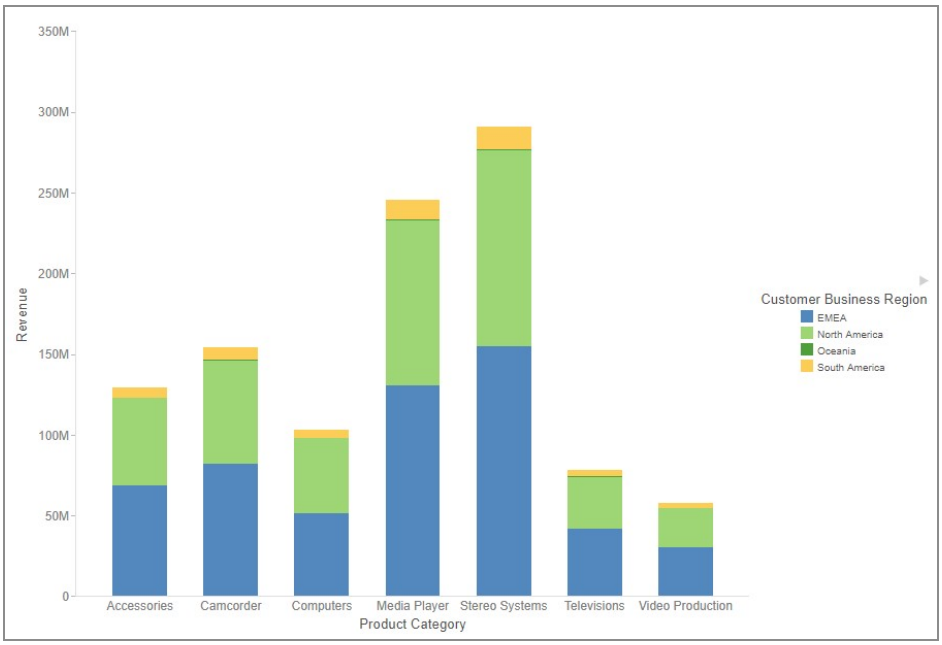


At run-time, the Auto Drill functionality displays a breadcrumb header. This defines your current location in the hierarchy of your data source and enables you to navigate back and forth between different levels in your data.

When you drill into a report, the result is filtered based on the selected value, and on the related values of any higher level sort fields. All applicable values for lower level fields are shown. Since charts do not have explicit field hierarchies, you can determine how filtering is applied when using Auto Drill in a chart with multiple dimensions, by selecting different options from the run-time menu.

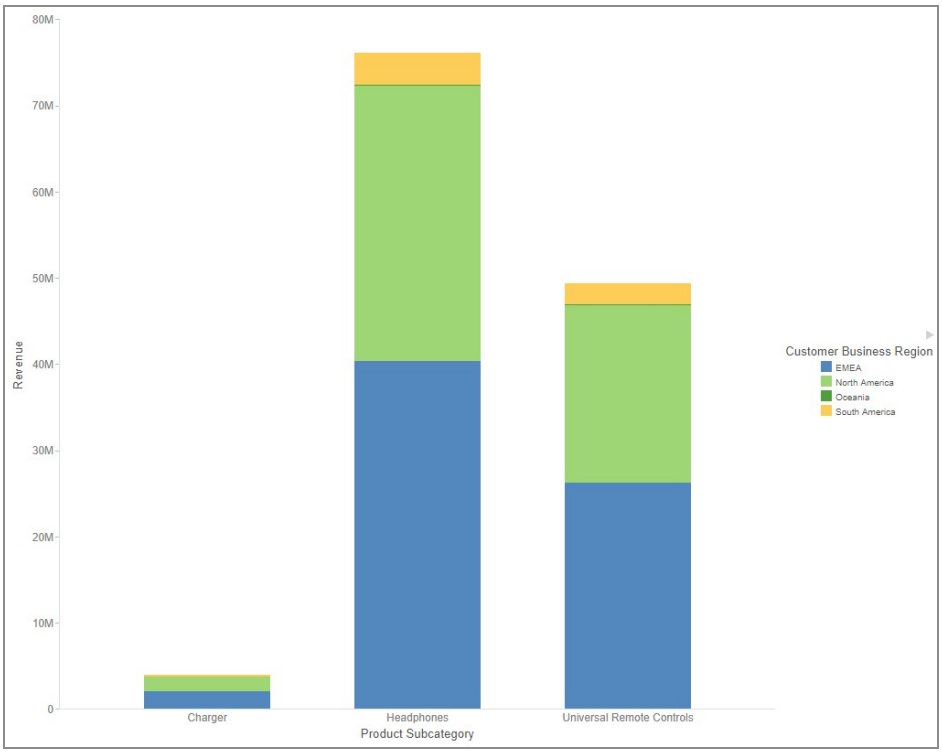
When Auto Drill is enabled for a chart with multiple dimension fields, such as if there is one dimension field in the Horizontal bucket and another in the Color bucket, you can choose whether to apply filters as part of the Auto Drill navigation, based on the run-time option that you select. If you choose to apply filters, then when you drill down into a field hierarchy using Auto Drill, the result drills into the area of the chart that you clicked, and is filtered based on all dimension field values pertinent to that area. If you choose not to apply filters, the dimension that you drill into is replaced with the next field in the hierarchy, filtered for the value of the selected Auto Drill link, and other fields are not filtered. The chart continues to show all applicable values for other dimension fields.

For example, the following image shows a stacked bar chart with the Product Category field in the Horizontal bucket, and the Customer Business Region field in the Color bucket.

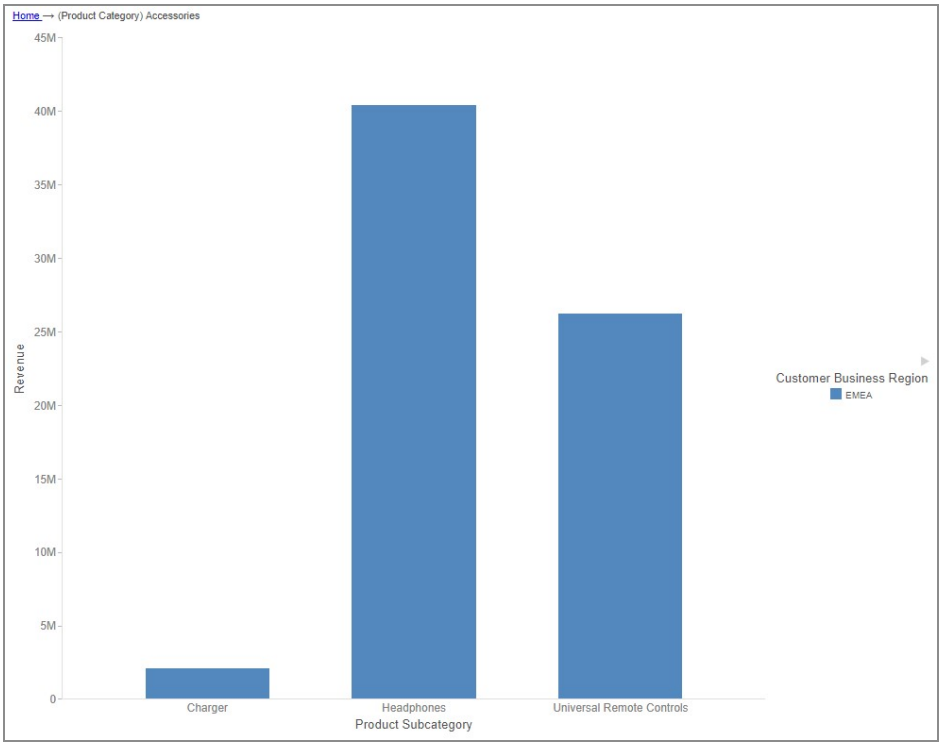


When you run the chart and point to a segment of it, the tooltip shows options to use Auto Drill with or without filters, as shown in the following image.

When you use Auto Drill to drill into the Product Category field from a segment in the Accessories riser, and choose not to apply filters, the resulting chart shows subcategories within Accessories, for all Business Regions, as shown in the following image.



If you drill into Product Category from a segment in the Accessories riser and do apply filters, then the resulting chart only shows the Business Region of the segment that you drilled into, as shown in the following image.



Note:

- The Auto Drill functionality is only available for data sources that have a dimension hierarchy. Dimension hierarchies are a capability of Business View Plus, and also of legacy Dimension View and Real Cube metadata.
- If you have Auto Drill enabled and you attempt to run your chart in deferred mode, the hyperlinks are not displayed. This is also true for Auto Drill enabled reports that are distributed through ReportCaster.
- Auto Drill is not supported for all HTML output format charts, or for HTML5 output format charts that do not support the new chart attributes syntax.
- You must use dimension fields as a sorting field, either BY or ACROSS.
- If you are creating a chart that has multiple dimension sort fields in the request and some of these belong to the same dimension hierarchy, you may encounter multiple links with the same label in the drill menu.
- Auto Drill functionality is not available in reports distributed by ReportCaster, because Auto Drill uses live data, in an interactive session, for data drilling. Data values and totals may not be the same if the data has changed since the last distribution. Mixing past data with current data could impact data analysis.
- When Auto Drill is enabled, Accessibility is disabled. When Accessibility is enabled, Auto Drill is disabled. In Chart mode, Accessibility is disabled, by default.

Use Auto Drill to Navigate the Hierarchy of Your Data Source

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

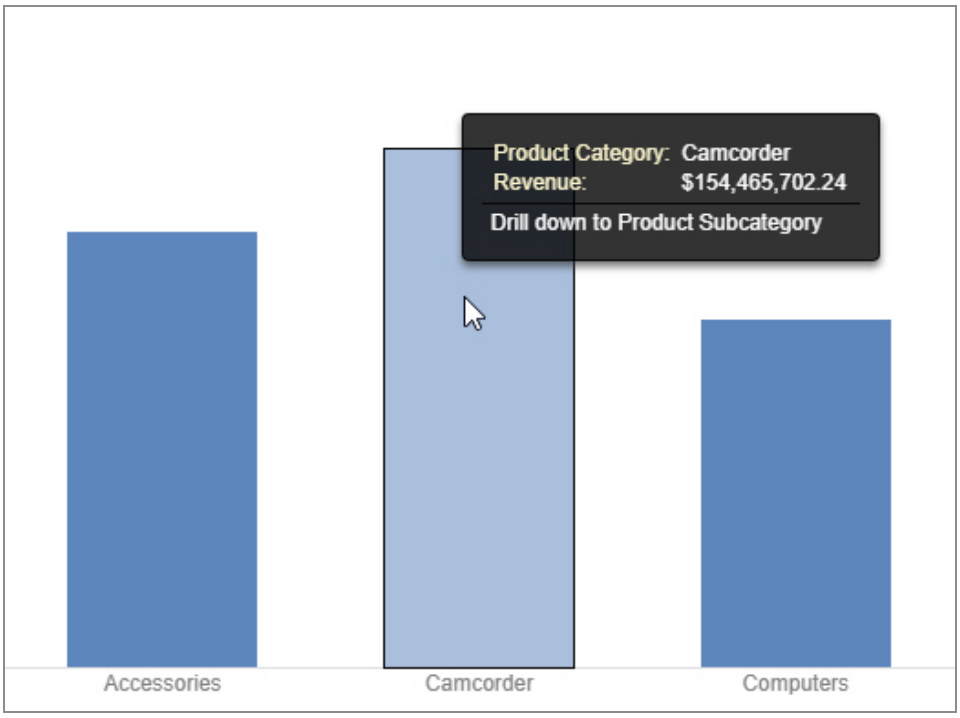
2. Select a workspace and a data source available from that workspace.

Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

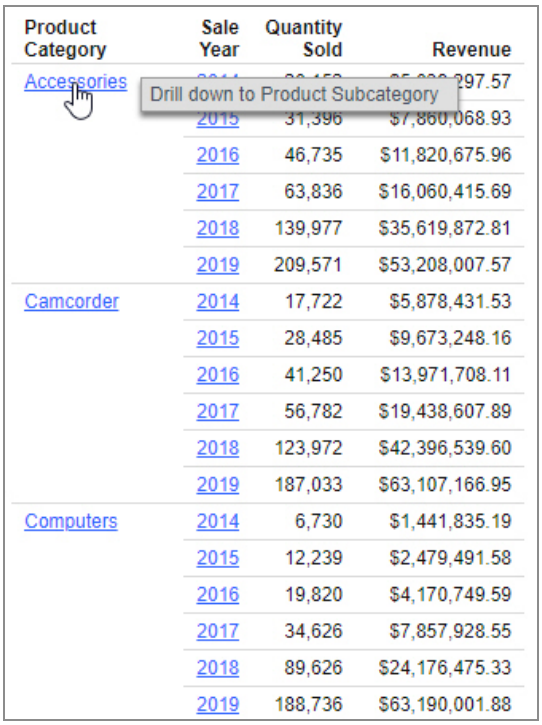
3. Create content with one or more hierarchical fields (for example, Product,Category).
4. On the Properties panel, on the Settings tab, expand **Content**, and then select **AutoDrill**.
5. Click **Run in new window**.

   Your content displays.
6. If you created a chart, hover over an area of the chart (for example, a bar).

   A menu appears, as shown in the following image.



If you created a report, click a drill-down link. A menu appears, from which you can choose to drill up or down depending on your position in the data source, as shown in the following image.

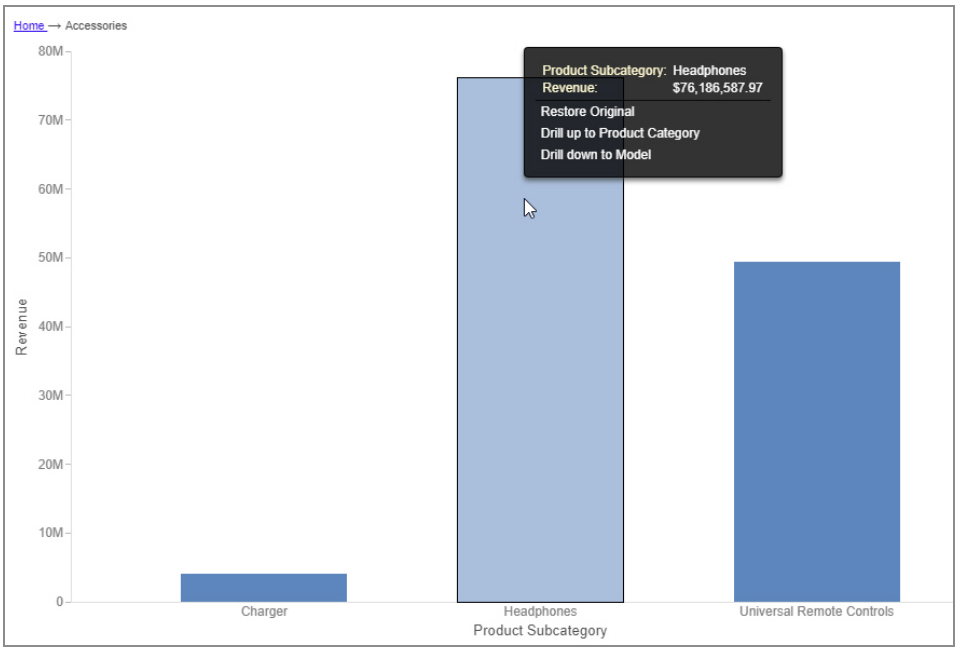


Product Category	Sale Year	Quantity Sold	Revenue
Accessories	2014	[illegible]	[illegible]297.57
	2015	31,396	$7,860,068.93
	2016	46,735	$11,820,675.96
	2017	63,836	$16,060,415.69
	2018	139,977	$35,619,872.81
	2019	209,571	$53,208,007.57
Camcorder	2014	17,722	$5,878,431.53
	2015	28,485	$9,673,248.16
	2016	41,250	$13,971,708.11
	2017	56,782	$19,438,607.89
	2018	123,972	$42,396,539.60
	2019	187,033	$63,107,166.95
Computers	2014	6,730	$1,441,835.19
	2015	12,239	$2,479,491.58
	2016	19,820	$4,170,749.59
	2017	34,626	$7,857,928.55
	2018	89,626	$24,176,475.33
	2019	188,736	$63,190,001.88

7. Select a hierarchical value to which to drill down to.

   Once you have drilled down on a field, you can subsequently drill up.

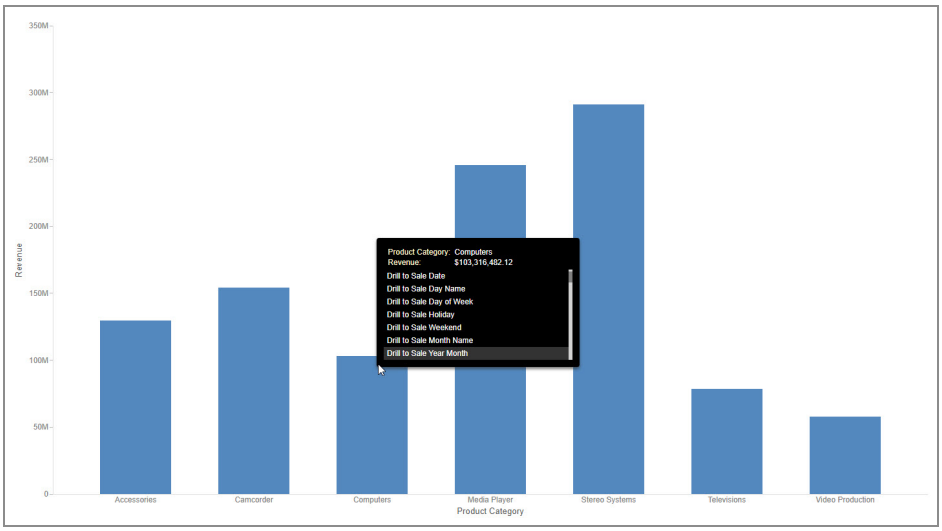
8. To return to the default state of the report or chart, click the **Home** link in the breadcrumb trail, or click a hyperlink or hover over a chart aspect and click **Restore Original**, as shown in the following image.



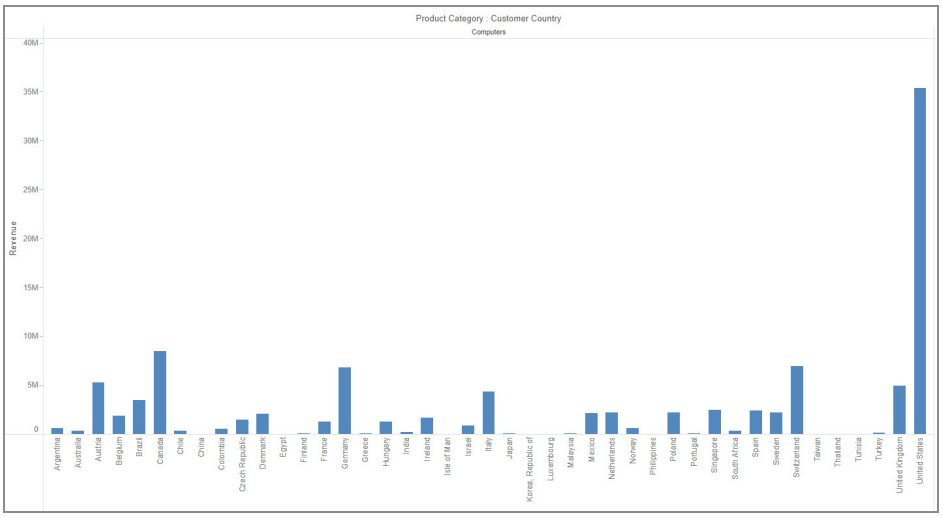
Enabling Drill Anywhere to Analyze Field Relationships

Auto Drill is a feature that allows you to drill into values from fields that are part of a data hierarchy, to see which subcategories within that hierarchy contribute to the values that you drill into, and to what extent. Drill Anywhere, meanwhile, resembles an enhanced version of Auto Drill. It does not require the fields in your initial content to be part of a data hierarchy, and it allows you to drill to any field in your data source, providing a powerful tool to explore relationships between values in different fields. Instead of drilling from a dimension field to its children within a pre-defined data hierarchy, with Drill Anywhere, you drill into a sort value to see which dimension values from the field that you select constitute subsets of that value. The resulting content is filtered by the value that you drilled into.

For example, the following image shows a simple bar chart with revenue aggregated by product category. Drill Anywhere is enabled for the chart, so target fields appear in the tooltip, in the Drill to menu.



With Drill Anywhere, you can investigate the dimension values that contribute to the value of the selected riser in a chart, or row of a report. If you point to the riser for the product category of Computers and click **Drill to Customer Country** in the tooltip, then the resulting chart shows information about how much revenue was generated by computer sales in each country, as shown in the following image.



To enable Drill Anywhere in your content, on the Settings tab, in the Content Settings area, click **Drill Anywhere**. When you run your content, the fields available as drill targets appear in the tooltips, in the Drill to menu. In reports, you can access these tooltips by clicking a hyperlink. Hyperlinks for Drill Anywhere in reports are available for all sort fields, allowing you to substitute a field of your choice for row or column group fields. In charts, you can access tooltips by pointing to a riser, allowing you to replace the sort field value that it represents.

Note: When using Drill Anywhere in a report using the In-Document Analytic (AHTML) output format, a limited number of fields are available for selection.

Drill Anywhere is only available for stand-alone content items, when they are run on their own or when added to a page assembled from external content.

When you use Drill Anywhere to drill to a field from the tooltip, the content refreshes and is sorted by the selected field. The data in the new content is filtered based on the value from which you accessed the tooltip. If you continue using Drill Anywhere to drill to other fields, new filters are applied to the content on top of any filters applied by previous executions of Drill Anywhere. The applied filter values are indicated by the breadcrumbs that appear above the chart or report once you have used Drill Anywhere. You can return to a previous drill level or to the original content using the breadcrumb links. You can also return to the original state of the content item by selecting **Reset** from the tooltip in the chart or report.

If your content uses multiple sort fields, you can use Drill Anywhere to drill into each of them. In a report, you can do this by accessing the tooltip from the sort field that you want to drill into. In a chart, these fields are listed separately in the tooltip. If you drill into multiple fields, a separate set of breadcrumbs displays for each, and filters for all values that you drill into, for all fields, are applied to the Drill Anywhere content. If you drill into a secondary sort field, then the resulting content is filtered by both the secondary sort value that you drilled into, and the primary sort value by which it was previously sorted.

Enabling Automatic Content Linking in ibi WebFOCUS Designer With Auto Linking

Auto Linking makes it easy to connect reports and charts in your development environment, expanding the reporting capabilities of your organization. Using Auto Linking, you can dynamically link multiple charts and reports with a single report or chart of any format, based on their common sort (BY) fields and parameters referenced in any filters. It is this commonality that dynamically links content in your WebFOCUS repository, allowing you to discover new possibilities in your data, and explore new relationships within your reporting enterprise. In addition, Auto Linking saves development time and effort, because drilldowns do not need to be manually created and maintained.

To use Auto Linking, you must use the AutoLink option in WebFOCUS Designer to set the reports or charts that provide Auto Linking drilldowns. In addition, you must also set

reports or charts to be Auto Link targets. The options to enable and disable Auto Linking and Auto Link target functionality are available in the **Content** area, located beneath the buckets on the WebFOCUS Designer Properties panel.

Auto Linking and Auto Linking target status can only be enabled for stand-alone content items. If you convert a chart or report with Auto Linking to a page, a warning appears, alerting you that Auto Linking functionality is not carried over.

Note: You can open an existing chart and enable Auto Linking or set the item as an Auto Link target.

When Auto Link functionality is activated, tooltips in your charts can display links in the tooltip for each sort (BY) field with qualifying target reports or charts at run time. In Auto Link enabled charts, you can add sort (BY) fields to the Vertical Axis, Horizontal Axis, or Color field containers. In Auto Link enabled reports, Auto Linking drill-down links are added to each sort value for which there are Auto Link targets available.

To qualify a chart as an Auto Link target, you must include filters that contain the parameters that you selected as the sort field or fields in Auto Linking enabled content. The parameter names defined in these filters must be the same as the sort (BY) field names in the Auto Link-enabled chart. For example, if your Auto Linking enabled content uses Product Category as a sort field, then the Auto Linking targets that are available are those that have parameters for the Product Category field. When you select a chart as the Auto Link target, it specifies that the parameter information should be cataloged, and is evaluated when an Auto Link-enabled chart is run.

For an Auto Link enabled chart or report at run time, the target reports and charts are those that have filters with parameters for all sort fields. For run time for charts, the linked sort field values in the Auto Link-enabled content are passed to the Auto Link target report or chart and used as a filter value.

For example, you may have an Auto Link-enabled chart that contains sort (BY) fields, Product Category and Model, with a measure (Sum) field, Revenue. To qualify as an Auto Link target, other charts in your repository can contain a single filter with a parameter for Product Category, or two filters with parameters for both Product Category and Model. When you run the Auto Link-enabled chart, the Product Category field links to target reports or charts that have a filter with a parameter for Product Category, and the Model field links to target reports or charts that have filters for both Product Category and Model.

You can access the target reports or charts from a tooltip option that displays when you point your mouse over an area of the chart, such as a bar that represents Revenue by Product Category and by Model.

Using Optional Parameters With Auto Linking to Enhance Drill-Down Results

In addition to the basic Auto Linking functionality that is available in WebFOCUS Designer, you can also add optional parameters to your Auto Link charts, extending the capability of this feature. An Auto Link-enabled chart can link to any target content that you are authorized to access that satisfies the sort (BY) field to the Auto Link target report filter parameter requirement. Auto Link target reports that satisfy this requirement and also have optional filter parameters for other fields are included in the Auto Link target report evaluation, so that all possible combinations of run-time parameters are evaluated and available as links as you run the request. This may produce additional reports or charts in your list of available Auto Link targets, offering you access to an expanded network of related content.

Setting a parameter to optional is not required because the Auto Link-enabled content passes the value for the fields being filtered to the Auto Link target report or chart. When a sort (BY) field value in an Auto Link-enabled chart is selected, that value and the value of its parent sort fields are passed to the Auto Link target. When a measure value in a chart is selected, all sort (BY) field values for that measure are passed to the Auto Link target. If you select the Optional option, the Auto Link target report or chart can run on its own (from the Resources Tree or within WebFOCUS InfoAssist) without being prompted by Autoprompt for a value for the parameter. This is because optional parameters are assigned a default value.

With Auto Linking, there is no limit to the number of charts and reports that are available from an Auto Linking drilldown, and Auto Linking enabled charts can also be an Auto Linking target, which contributes to the development of a cascading linkage of charts and allows you to drill through continuously through multiple charts and reports.

Note:

- The linked reports and charts displayed are limited to those that you are authorized to run or run deferred.
- The Auto Link enabled and Auto Link target options can be set individually, or both can be set on the same chart if that item meets the Auto Linking requirements.
- Consideration should be given to how many reports or charts are indicated as Auto Link targets, as the run-time Multi-drill menu for the qualifying target reports or charts may become long in length. In these cases, some browsers may display a script processing warning message.
- Auto Linking utilizes the Multi-drill feature with cascading menus, except when running an HTML report with On-demand Paging enabled or a chart request that is a legacy graph format (PFJ-based formats, such as PNG and non-bucket HTML5), which displays a single-level list in the order the drilldowns are specified in the request.
- The Multi-drill cascading menu displays:
  - Horizontal lines to separate user-specified drilldowns and Auto Link navigation options.
  - Auto Link target reports in a single-level list that is sorted alphabetically, first by folder, and then the Auto Link target reports and charts within the folder. This may differ from the sort order of the resource tree that also applies the Properties Sort order option when sorting folders and items within folders.
- When drilling down through a list of Auto Link target reports and charts, a previously selected Auto Link target report or chart is excluded so that the available Auto Link targets are reports and charts that you have not yet viewed.

Set an Existing Report or Chart as Auto Link Enabled

Procedure

1. On the WebFOCUS Hub or the WebFOCUS Home Page, click the **Workspaces** tab, and navigate to a chart or report for which you want to enable Auto Linking.
2. In the content area, right-click the chart that you want to set as Auto Link enabled, and then click **Edit**.

   WebFOCUS Designer opens in the relevant mode.
3. Verify that there is a sort (BY) field in the report or chart.
   - For charts, sort fields are added to the Vertical, Horizontal, or Color buckets.
   - In a report, sort fields are added to the Rows bucket.
4. On the Properties panel, on the Settings tab, expand **Content**, and then select **AutoLink**.
5. Save the report or chart.

   Your existing chart or report is now Auto Link enabled.

Set an Existing Chart as an Auto Link Target

Procedure

1. On the WebFOCUS Hub or the WebFOCUS Home Page, click the **Workspaces** tab, and navigate to a chart that you want to link to as an Auto Link target.
2. In the content area, right-click the chart that you want to set as an Auto Link target, and then click **Edit**.

   WebFOCUS Designer opens in the relevant mode.
3. On the Properties panel, on the Settings tab, expand **Content**, and then select **AutoLink target**.

   > **Note:**
   > Selecting the **AutoLink target** specifies that the parameter information for this chart is stored, adding it to the repository of reports and charts that are evaluated when an Auto Link-enabled chart is run.
4. Verify if the report or chart has an existing filter, as qualifying target reports are those that have filters with parameters for the sort (BY) fields in Auto Link enabled reports or charts. If a filter does not exist, add a filter prompted filter to the target report or

chart.

a. From the Data pane, drag a sort (BY) field onto the Filter toolbar. You do not need to select a value.

> **Note:**
> When creating a parameter for a field, the parameter name defaults to the name of the field that you select. For example, if you create a filter for the Product Category field by dragging it to the Filter toolbar, the name of the resulting parameter is &PRODUCT_CATEGORY, reflecting the field name PRODUCT_CATEGORY. You can see the field name in the tooltip when you point to a field on the Fields pane.

5. Save the chart.

   Your existing chart is now set as an Auto Link target.

Create a New Auto Link Enabled Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Settings tab of the Properties panel, expand the Content area, and then select **AutoLink**.

4. Add fields to the report or chart, ensuring that one is a sort (BY) field.

   - For charts, sort fields are added to the Vertical, Horizontal, or Color field containers depending on the chart type.
   - For reports, sort fields are added to the Rows bucket.

5. Save the chart.

Your chart is now set as Auto Link enabled.

Create a New Auto Link Target Chart

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. On the Settings tab of the Properties panel, expand the Content area, and then select **AutoLink target**.

   > **Note:**
   > Selecting **AutoLink target** specifies that the parameter information for this chart is stored, adding it to the repository of reports and charts that are evaluated when an Auto Link-enabled chart is run.

4. Add fields to the chart or report.

5. Add a prompted filter.

   From the Data pane, drag a sort (BY) field onto the Filter toolbar.

   > **Note:** When creating a parameter for a field, the parameter name defaults to the name of the field that you select. For example, if you create a filter for the Product Category field by dragging it to the Filter toolbar, the name of the resulting parameter is &PRODUCT_CATEGORY, reflecting the field name PRODUCT_CATEGORY. You can see the field name in the tooltip when you point to a field on the Fields pane.

6. Save the chart or report.

   Your content is now available as an Auto Link target.

Running an Auto Link Enabled Chart

Auto Linking is supported from any WebFOCUS repository content, wherever it is run online.

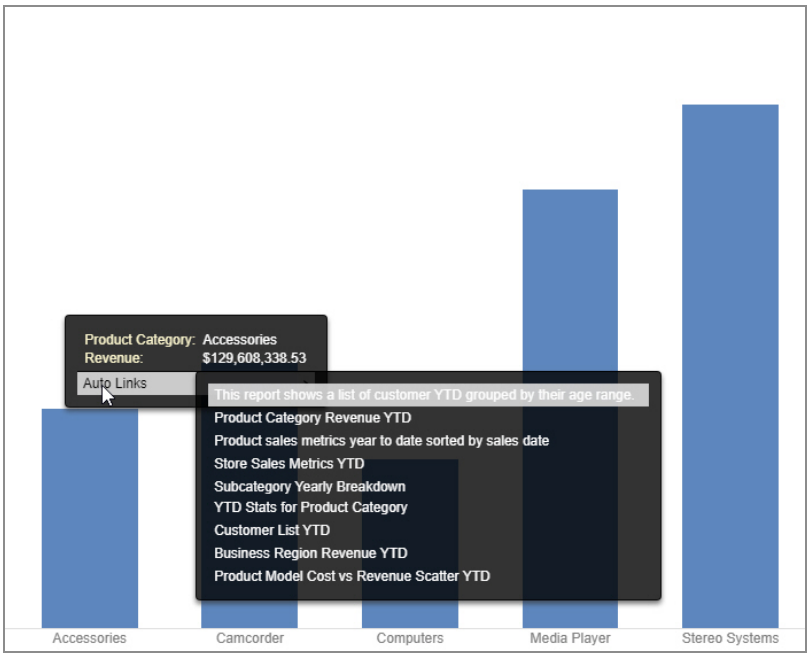
Launching an Auto Link Enabled Report

From the WebFOCUS Hub or the WebFOCUS Home Page, right-click a report that is Auto Link enabled, and then click **Run**.

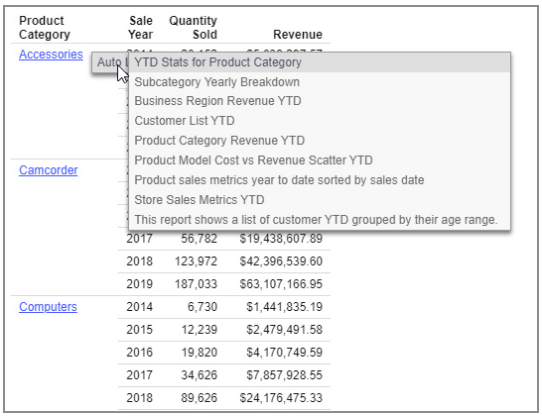
Using Hyperlinks to Link to Other Reports or Charts

Use the hyperlinks to link to other reports and charts, based on the following information:

- **Charts.** Displays with aspects over which you can hover (for example, a bar) in the chart. A tooltip displays with the Auto Link target reports and charts, as shown in the following image.



- **Reports.** Values pointing to Auto Link targets display as clickable links. When you click a link, a menu appears, allowing you to select a target to open, as shown in the following image.



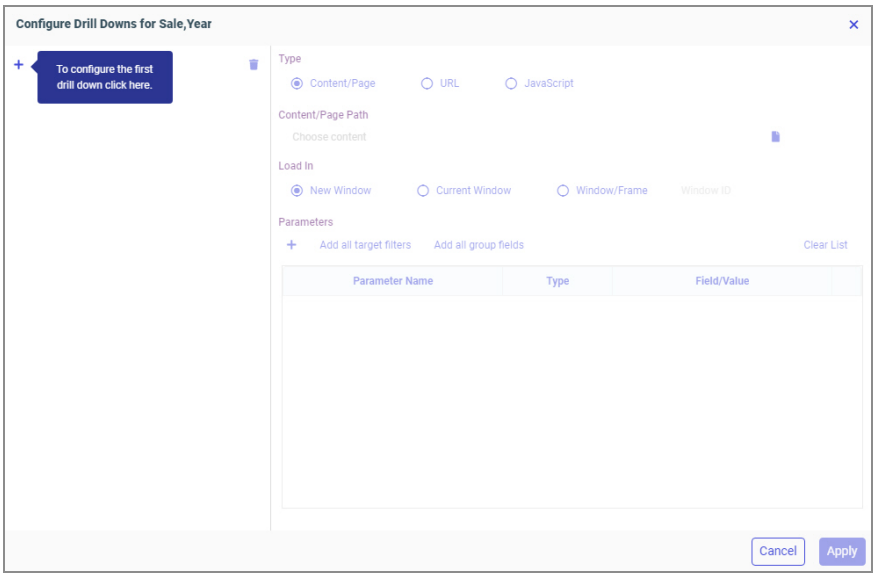
Adding Drill-Down Links to Content

Drilldowns are a powerful feature that allows users to navigate from one content item to another, providing access to additional, related information at run-time. Drill-down links can also be used to pass parameters, so that the target content is automatically filtered for the value that a user selects, allowing you to maintain context between items. By linking content with drilldowns, you can vastly expand the amount of information that is available from a single chart or report.

In a report, drill-down links are provided as hyperlinked values. In a chart, drill-down links are ran when you click a section of the chart. In a map, drill-down links are ran when you click a section of the map or use one of the selection options. When you add multiple drill-down links to a single field, you can select one from the tooltip menu that results when you click a report hyperlink or point to an area of a chart.

You can create different types of drill-down links to connect to different types of target items. You can use the link to open a selected content item or page, connect to a URL, or run a JavaScript function .

To create drill-down links for a field, right-click a field in any bucket of a report, or in the default measure bucket of most chart types, and click **Configure drill downs**. The Configure Drill Downs dialog opens, as shown in the following image.



To create a drilldown, click the plus icon. Next, determine the type of content that you want to link to. The information that you provide to create the drilldown differs depending on the target type.

Select **Content/Page** to link to another procedure, such as a chart or report, or to a page or a map. Select the item from your WebFOCUS repository, and choose where it should load. You can load the target content in a new window or browser tab, the same window as the current item, or you can specify a window or frame by name.

> **Note:** Drill-down links are functional at design time. When the drill-down target location is Current Window, clicking a drill-down link in the canvas opens the target in a new browser tab or window so that WebFOCUS Designer can stay open. When you run your content, drilldowns with a target location of Current Window load in the window where the drilldown was accessed.

You can also configure the drilldown to pass parameter values to the target item. If the target uses dynamic parameters, such as prompted filters, matching parameters with the same name are automatically created to pass the value that a user clicks. The selected value is applied to the target content when it loads.

To manually add parameters to pass through the drilldown, click the plus sign in the Parameters section of the Configure Drill Downs dialog. First, provide a parameter name, which should match the names of amper variables in the target content. Using the menu in the Type column, set whether the parameter should pass field values, a static value that you set, or the value set for a global variable in your environment. Finally, select a field, enter a value, or select a global variable to pass. You can automatically create all parameters in the target content by clicking **Add all target filters**, or create parameters for

all sort fields in your parent content – that is, the chart or report that you are currently editing – by clicking **Add all group fields**. You can then delete individual parameters if you want, or delete all parameters by clicking **Clear List**. Drill-down parameter options are shown in the following image.

To link to a web page through a URL, select the **URL** radio button. The URL must include the protocol, for example, **http** or **https**, if it is an external link. Otherwise, the URL is interpreted as a partial URL within your WebFOCUS environment.

Next choose where the target URL should load, whether in a new window, the same window, or elsewhere. Finally, add any parameters. If you add parameters, they are appended sequentially to the end of the URL as key-value pairs using a GET request in the following format:

```
?parameter_name1=value1[&parameter_name2=value2 ... &parameter_
namen=valuen]
```

where:

parameter_name1, parameter_name2, parameter_namen

Are parameter name values, specified in the Parameter Name column of the Configure Drill Downs dialog.

value1, value2, valuen

Are parameter values. They can be field values passed from the report, or static values. The field or static value is specified in the Field/Value column of the Configure Drill Downs dialog.

The question mark (?), ampersands (&), and equals signs (=) are added to the URL automatically, so you do not need to include them when setting up the drilldown.

To run a JavaScript function from the drill-down link, select the **JavaScript** radio button. In the JavaScript Function text box, supply the name of the JavaScript function. The

function and the arguments that it accepts must already be defined for the function to work. You can define custom JavaScript functions in a .js file on your environment, which you can create using the text editor or upload from your machine, then reference that file using the SET JSURLS command. This command can be applied globally by adding it to edasprof.prf on the WebFOCUS Reporting Server, so the functions in the file are always available to whoever has access. Alternatively, you can add the SET JSURLS command to the Preprocessing Other component of a Reporting Object, then use it as the data source for your content.

In the Request Parameters area, add each argument, in order, as a separate row. These arguments can be static values, by setting the Type column to **Value**, or dynamic field values, by setting the Type column to **Field**. Once the type is set, enter the value or select the field whose value should be used as the argument.

You can manage your drilldowns from the pane at the left side of the Configure Drill Downs dialog. You can create multiple drilldowns that you can access from the same hyperlink in a report or the same area of a chart. To create more drill-down links that you can select from the same location, click the plus sign above the list of drilldowns in the Configure Drill Downs dialog, as shown in the following image.

When you click a link in a report or an area of a chart that includes multiple drilldowns, a menu appears, listing them all.

Note: The menu for multiple drilldown links on a single field does not display if a report is created as part of a page. They display properly for charts, stand-alone reports, and reports added to a page as external content.

To rename a drilldown link, double-click the title in the drilldown list, and type a new title. These titles appear in the tooltip in your content when selecting a drilldown to run. Drag a drilldown using the handles to the left of the drill-down title to change the order in which your drilldowns appear.

If you want to remove a drilldown, click the X next to its name. To remove all drilldowns, click **Remove All Drill Items**.

Pass Parameter Values to a Page

You can drill down from a chart or report to a page created in WebFOCUS Designer. Drill-down parameters can be passed to the page to apply their values to any page filters.

Procedure

1. Create and save a page that includes prompted filters. These filters can be created by adding parameterized external content to an assembled page and clicking **Add all filters to page** on the Filters tab of the sidebar, or can be created in a page with new content by dragging a field to the Filter toolbar.

   The filters in this page is populated with values passed from a drill-down report.

   For information on creating a page, see Creating Pages.

2. Create a report.

   On the WebFOCUS Hub or the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens.

3. Select the same data source that was used to filter the page, and click **Select**.

   The WebFOCUS Designer canvas appears.

4. Create a chart or report that is sorted by the same fields that are used as filters in the page. For example, if the page is filtered by Customer Business Region and Sale Year, create a report with those fields in the row bucket. Add other measures and dimensions to your content based on your needs and preferences.

5. Determine the measure field in a chart, or any field in a report, to which to add drill-down links.

   If you are passing multiple parameter values through the drilldown, selecting a field in the chart or report with additional sort values under it may help clarify to the user which values are passed.

   For example, in the report shown in the following image, the Sale Year field is the secondary sort field while Customer Business Region is the primary sort field, so each row in the Sale Year column represents a sale year and a business region.

Customer Business Region	Sale Year	Quantity Sold	Revenue
EMEA	2014	115,367	$32,608,030.34
	2015	132,574	$39,630,841.14
	2016	193,158	$57,591,488.69
	2017	255,468	$76,647,406.85
	2018	464,797	$140,440,022.62
	2019	699,498	$215,398,344.26
North America	2014	46,386	$13,060,621.95
	2015	61,246	$18,287,269.34
	2016	92,483	$27,473,407.52
	2017	147,038	$43,907,888.55
	2018	426,176	$128,662,736.78
	2019	694,386	$212,755,358.69
Oceania	2015	56	$14,736.30
	2016	165	$48,743.31
	2017	374	$104,323.54
	2018	1,321	$424,709.91
	2019	6,481	$1,970,040.66

In this case, adding the drill-down links to the Sale Year column would allow you to choose from all of the available Customer Business Region and Sale Year values, whereas adding the links to the Customer Business Region column would only allow you to pass parameter values for the first sale year in each business region group. As an alternative to creating drilldowns on the lower level sort field, you could ensure that all parameter values are passed from a report by using repeating sort values. On the Content picker, select the **Grid** report layout option.

6. Right-click the field to which you want to add drill-down links and click **Configure drill downs**.

   The Configure Drill Downs dialog opens.

7. Create a drilldown by clicking the plus sign, **Create New Drill Item**, icon in the pane on the left.

   The Content/Page drilldown type, which we are using to drill to a page, is selected by default.

8. In the Content/Page Path text box, click the file icon to select the page that you want

to drill to.

Notice that the Parameters grid is automatically filled based on the filters in the selected page.

9. In the Load In area, select the location where the target page should run. It can be the same window where the report was run, in a new browser tab, or a user-specified location.
10. In the Parameters section, check whether the parameters that you want to pass have already been added. To add a new parameter, click the plus icon, and proceed with the following steps.
    a. In the Parameter Name column, type the name of the parameter. Typically, this matches the field name. You can check the parameter names used in an assembled page by clicking the **Info** button.
    b. From the Type menu, choose whether the value to pass should be a field value, associated with the link that a user selects, the value of a global variable defined in your environment, or a constant value.
    c. If you selected **Field**, use the Value menu to select a field from your content. If you selected **Constant**, type a constant value to pass to the page.
11. Repeat step 10 for all parameters whose values you want to pass to the target page, or click the X in the right-most column of the Parameters grid to remove unneeded parameters.
12. Double-click the default drill-down name, for example, **Drill Item 1**, to change the name of the drilldown. This name appears in the tooltip when you point to a drill-down link, or click a link that includes multiple drilldowns.
13. Click **Apply** to create the drilldowns.

    In a report, drill-down links are added for each value of the field where the drilldown was created. In a chart, drilldowns are added to each section.
14. Run the chart or report.
15. At run-time, drill down to the target page.
    - If you created a chart, click a section of the chart. If there are multiple drilldowns, select the drilldown that you just created.
    - If you created a report, click a drill-down link. If that field of the report has

multiple drilldowns associated with it, select the drilldown that you just created.

16. The page opens in a new browser tab or window. Notice that the value or values represented by your selection in the parent content item are applied as filter values in the page.

Pass a Global Variable Value Through a Drilldown

A global variable is a variable that maintains its value for the duration of a WebFOCUS session or until a different value is assigned. Global variables are identified by double ampersands. As opposed to local amper variables, which you can pass different values through a drilldown to filter target content based on the value that you select, the best use for global variables is to maintain a single consistent value as you run different content items. In this example, we set a global variable to the current date, allowing us to filter target content for that date value by invoking the global variable.

The advantage of using a global variable is that its value is not contingent on the content item that is passing it. A local variable, when passed through a drilldown, must be set in the parent procedure, so a field must be added that contains values that the local variables can pass. This is not the case for a global variable, which is set externally to the procedure. However, since the global variable is not set by the procedure that passes it, the drill-down value that you select does not affect the value that is passed, unless the global variable is set to be dependent on a local variable.

The drill-down parameter options in WebFOCUS Designer provide a list of global variables that are already defined in your environment, so the first step is to set the global variable value. Next, you can create target content filtered by a field that can accept that value, and finally you can create the drill-down content that passes the global variable to the target.

Procedure

1. On the WebFOCUS Hub or the WebFOCUS Home Page, click **Workspaces** to open the Workspaces area.
2. In the +Content menu, point to **Other**, and then click **Text Editor**.

   The New Text Resource dialog opens.

3. Click **FOCEXEC (fex)** to create a new WebFOCUS procedure using the text editor.

   This procedure sets a value for a new global variable.

   The text editor opens.

4. In the text editor, type the following:

   ```
   -SET &&CURRDATE = &YYMD;

   -TYPE &&CURRDATE
   ```

   The first line sets the value of a new global variable, *&&CURRDATE*, to today's date, represented by &YYMD. &YYMD is a system variable that always returns the current date in a YYMD (year-month-day) format. You can change **CURRDATE** to whatever you want, since it is just the name of the global variable that you are creating.

   The second line displays the value of the global variable, &&CURRDATE in this example, as text in the output using the -TYPE command, so you can make sure that it has been set properly.

   Click **Preview** on the text editor toolbar. A new window opens with a message showing the result of the ran procedure. There is no actual output, but it should show the current date in YYMD format under the Detail area.

   The global variable is now set for the duration of the WebFOCUS session. To ensure that the variable is always set when a user signs in, an administrator can set this procedure to run automatically using a setting in the WebFOCUS Administration Console. To configure this setting, complete the following steps:

   a. Save the procedure that sets the global variable and return to the WebFOCUS Hub or Home Page.

   b. In the Workspaces area, navigate to the location where you saved the procedure. Right-click it and click **Properties**.

   c. Copy the value of the Path property, which is the IBFS path of the procedure that sets the global variable value in your environment.

   d. On the WebFOCUS Hub, click the **Management Center** and then click **Administration Console**. Alternatively, on the WebFOCUS Home Page banner, open the **Settings** menu and then click **Administration Console**.

      The WebFOCUS Administration Console opens.

e. In the navigation pane on the Configuration page of the Administration Console, click **Other**.

f. Paste the path of the procedure that sets the global variable value into the Paths to be ran on user Sign-in field.

g. Click **Save**.

When a message appears indicating that the new setting has been saved successfully, click **OK** and close the Administration Console.

5. Create a content item that is the target of a drilldown that passes the global variable. We create this item first since we need to be able to select a target item when we create the drilldown.

   In this case, since the global variable that we have created is set to a date value, we want to create target content that is filtered by a date field.

   Create a chart or report.

   WebFOCUS Designer opens, and you are prompted to select a data source.

6. Navigate to and select a data source that includes a date field with data for the current date, and then click **Select**.

   The WebFOCUS Designer canvas displays.

7. From the field list, drag a date field to the Filter toolbar to create a dynamic parameter filter. You do not need to select values for this filter control, since they are supplied by the global variable.

   The date control in WebFOCUS Designer provides a date range, so when we pass the global variable to the filter parameter, we pass it as both the start and end date to filter our content to show data for just the current date.

8. Add fields to your content, and, optionally, change the content type and add more parameter filters. You can also add more content items to create a page by clicking **Convert to page**, and then dragging a field or container onto the page or clicking **Add Container**. All items on this page are affected by the filter controls on the Filter toolbar. You can use drilldowns to pass local parameter values to these filters alongside the global variable value that we pass.

   When you are finished creating the target content, click **Save**.

9. Create a chart or report that includes drill-down links that pass the global variable that we configured to our target item.

On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

WebFOCUS Designer opens, and you are prompted to select a data source. If you added any filters in addition to the one that receives the global variable value, you should use the same data source as your target item.

10. Change the content type and add fields to create a content item to which you add your drilldowns. If you added any filters to the target item in addition to the one that recieves the global variable, you should make sure that the fields used for those filters are added to this content item.
11. Right-click a dimension field in a report or a measure field in the chart and click **Configure drill downs**.

    The Configure Drill Downs dialog opens.
12. Create a drilldown by clicking the plus sign, **Create New Drill Item**, icon in the pane on the left.

    The Content/Page drilldown type, which we are using to drill to the target content item, is selected by default.
13. In the Content/Page Path text box, click the file icon to select the item that you want to drill to.

    Notice that the Parameters grid is automatically filled based on the filters in the selected page.
14. In the Load In area, select the location where the target page should run. It can be the same window where the report was run, in a new browser tab, or a user-specified location.
15. In the Parameters section, check whether the parameters that you want to pass have already been added. Parameters for start and end dates for a date range filter should appear automatically since the filter was created in the target item.

    For both of these parameters, complete the following steps:

    a. From the Type menu, select **Global variable**.

       A dropdown menu appears in the Field/Value column.

    b. In the Field-Value column, select the global variable that you defined earlier.
16. Repeat these steps for the second date parameter. Filters for date fields create ranges with a start and end date. by default. By setting these to the same date limits

the date range to a single day.

17. Set values for any other parameters in the target report by specifying the field whose value should be passed based on the value that you select to run the drilldown, or a static value that you always want to pass.
18. Click **Apply** to create the drilldowns.
19. On the Visualization toolbar, click **Run in new window** to run your content and test the drilldowns.
20. Run a drilldown. It should run the target content, which should be filtered for the current date as specified by the global variable that was passed.
21. If everything works as expected, return to WebFOCUS Designer and save your content.

Drill to a Webpage From a Selected Value

When you pass parameters using a URL drilldown, they are sent using GET requests. You can use this functionality to access different web pages based on the value that you select from your content.

In this example, we use a URL drilldown to open a Wikipedia article for the country that we select.

Procedure

1. In WebFOCUS Designer, create a chart or report using a field with country names as a sort field.
2. In a chart, right-click a measure field or, in a report, right-click the field to which you want to add drill-down links, and then click **Configure drill downs**.

   The Configure Drill Downs dialog opens.
3. Create a drilldown by clicking the plus sign, **Create New Drill Item**, icon in the pane on the left.
4. Change the Type of the drilldown to **URL**.
5. In the URL text box, type the root URL to which the GET request is added. For this example, type **https://en.wikipedia.org/w/index.php**.

A question mark, followed by the parameter name and value, is appended to this URL.

6. Optionally, change the target location of the URL from **Current Window**, which opens the target URL in the same window or tab as the drill-down chart or report, to **New Window**, which opens the target URL in a new tab or window, or **Window/Frame**, which opens the URL in a user specified container.
7. Add a new parameter to the drilldown.
    a. Click the plus sign icon under Parameters to add a new parameter.
    b. In the Parameter Name column, type the name of the parameter. The URL that we are using in this example accepts a parameter called **title**, which is the name of the Wikipedia article to open.
    c. Leave the Type column set to **Field**. We want to pass dynamic field values through the URL drilldown so that the value that we click is reflected in the article that opens on click.
    d. Select the field whose value you want to pass. For this example, select the country field that you added to your chart or report.
8. Optionally, in the pane on the left, double-click the default drill-down name, for example, **Drill Item 1**, and type a new name for your drilldown. This name appears in the tooltip when you point to a drilldown link in a report, or when there are multiple drilldowns on a single field.
9. Click **Apply** to create the drilldown.
10. Click **Run in new window** to view your content at run time.
11. Click a hyperlink in a report or a section of a chart. The Wikipedia article opens for the value that you clicked.

Run a JavaScript Function From a Drilldown

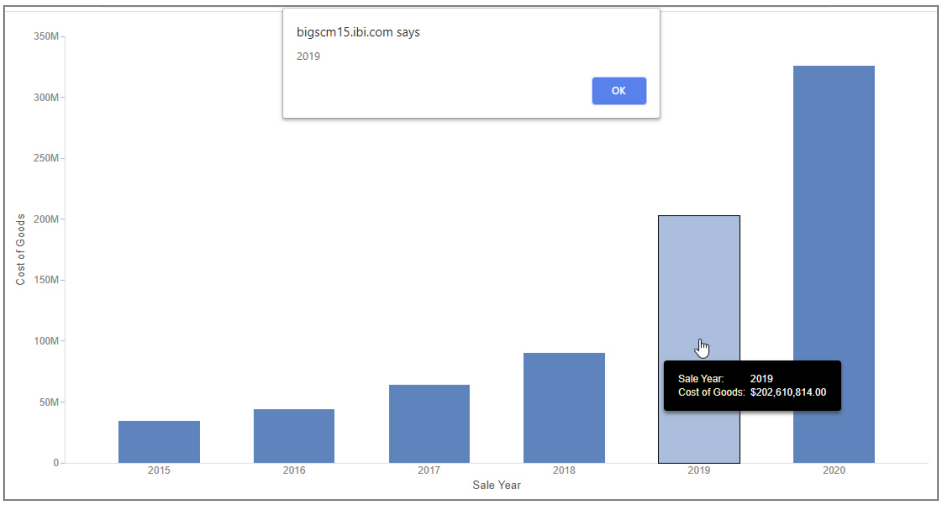
You can trigger a JavaScript function when using a drilldown in your content. The parameters defined when setting up the drilldown are used as the arguments in the JavaScript function. This simple example uses the alert function, which requires no special setup or configuration, to display the dimension field value that a user clicks.

Procedure

1. In WebFOCUS Designer, create a chart or report and add at least one measure field and one dimension field.
2. In a chart, right-click a field in the default measure bucket, or in a report, right-click the field to which you want to add drill-down links, and click **Configure drill downs**.

   The Configure Drill Downs dialog opens.
3. Create a drilldown by clicking the plus sign, **Create New Drill Item**, icon in the pane on the left.
4. Change the Type of the drilldown to **JavaScript**.
5. In the JavaScript Function text box, type **alert**, which is the name of the function used in this example. It opens a pop-up window displaying the value of the first argument as text.
6. Add a new parameter to the drilldown.
   a. Click the plus sign icon under Parameters to add a new parameter.
   b. To display a field value in the alert message, leave the Type column set to **Field**. Change the Type to **Value** to always display the same value in the alert.
   c. Select the field whose value you want to pass. It can be a measure field or a dimension field.
7. Optionally, in the pane on the left, double-click the default drill-down name, for example, **Drill Item 1**, and type a new name for your drilldown. This name appears in the tooltip when you point to a drilldown link in a report, or when there are multiple drilldowns on a single field.
8. Click **Apply** to create the drilldown.
9. Click **Run in new window** to run your chart or report.

   Your content runs in a new browser tab or window.
10. Click a hyperlink in a report or a section of a chart. An alert appears, displaying the value that you selected, as shown in the following image.



Run a Custom JavaScript Function From a Drilldown

With some additional configuration, you can run a custom JavaScript function from a drilldown link. This provides significant flexibility in defining what occurs when a drill-down link is clicked. In this example, we have created a JavaScript function that opens a mailto URL, dynamically populated with an email address and first name from our data source. The first name is added to the subject line of the email. Since the email address in a mailto URL is not supplied as a key-value pair, we cannot do this using a URL drilldown.

Procedure

1. First, define the custom JavaScript function using the text editor.
    a. On the WebFOCUS Hub or the WebFOCUS Home Page, click **Workspaces**.
    b. In the +Content menu, point to **Other**, then click **Text Editor**.

       The New Text Resource dialog opens.
    c. On the **Web** tab, click **JavaScript (js)**.

       The text editor opens.
    d. Enter the code for your JavaScript function.

       In this example, the function to generate a mailto URL is called fnMail, and is

coded as follows:

```
function fnMail(Email,Name)

{

window.location = 'mailto:' + Email + '?Subject=Hello, ' +
Name;

    }
```

The two parameters that we need to supply from the drilldown are the email address, for the Email argument, and the first name, for the Name argument.

e. Save the new JavaScript file to your WebFOCUS Repository.

2. Create a report using WebFOCUS Designer.
3. In WebFOCUS Designer, select a data source that includes email address and first name fields.

   In this example, we are using the wf_retail_lite.mas Master File, part of a sample dataset that can be added to your WebFOCUS environment.
4. On the Content picker, change the content type to a report layout, either the **Standard Report** or **Grid** options.
5. Optionally, add filters to reduce the size of the report and the processing time that it requires.
6. Add the email address and first name fields to your report.

   If you are using the wf_retail_lite Master File as your data source, in the Dimensions area, expand **Customer** and then **Full,Name**, then double-click **Email,Address** and **First,Name**.
7. Add one or more measure fields to the report.
8. Right-click a field, for example, the email address field, in one of the buckets, and click **Configure drill downs**

   The Configure Drill Downs dialog opens.
9. Create a drilldown by clicking the plus sign, **Create New Drill Item**, icon in the pane on the left.
10. Change the Type of the drilldown to **JavaScript**.

11. In the JavaScript Function text box, type **fnMail**, which is the name that we gave to the function used in this example.
12. Add the first parameter, which supplies an email address, to the drilldown.
    a. Click the plus sign icon under Parameters to add a new parameter.
    b. Leave the Type column set to **Field**. The recipient of the email from the mailto URL should change depending on the value that we click in the report.
    c. Select the field whose value you want to pass. In this case, it is the email address field.
13. Add the second parameter, which supplies an associated first name, to the drilldown.
    a. Click the plus sign icon under Parameters to add a new parameter.
    b. Leave the Type column set to **Field**. The first name shown in the subject of the email from the mailto URL should change depending on the value that we click in the report.
    c. Select the field whose value you want to pass. In this case, it is the first name field.
14. Optionally, in the pane on the left, double-click the default drill-down name, for example, **Drill Item 1**, and type a new name for your drilldown. This name appears in the tooltip when you point to a drilldown link in a report, or when there are multiple drilldowns on a single field.
15. Click **Apply** to create the drilldown.
16. Save the report and exit WebFOCUS Designer.
17. Finally, we must tell our report request where the custom JavaScript function is defined. We can use the SET JSURLS command to specify the location of the .js file that we created earlier. This command can be added to the edasprof server profile so that it is available to all procedures. This step must be performed by someone with administrative privileges on the WebFOCUS Reporting Server.

    > **Note:** As an alternative, you can add the SET JSURLS command to the Preprocessing Other component of a Reporting Object, then use it as the data source for your content.

    On the WebFOCUS Hub, click **Management Center** and then click **Server**

Workspaces.

Or, on the WebFOCUS Home Page, open the plus menu and click **Prepare and Manage Data**.

In the WebFOCUS Reporting Server browser interface, open the **Tools** menu and click **Workspace**.

The Server Workspace view opens.

18. On the resource tree, expand **Configuration Files**, then right-click **Server Profile - edasprof.prf** and click **Edit**.
19. On a new line, type **SET JSURLS=**
20. After the equals sign (=), in quotes, add the run-time URL for the .js file in which the function is defined, then close with a semicolon (;).

    The run-time URL uses the following format:

    ```
    http[s]://hostname:port/context_root/run/path_to_item
    ```

    where:

    hostname

    Is the name of the system where WebFOCUS is installed.

    port

    Is the port number used by WebFOCUS.

    context_root

    Is the context root used for your WebFOCUS application. For example, ibi_apps.

    path_to_item

    Is the IBFS path of the JavaScript file in your WebFOCUS repository. You can find the path of a page by right-clicking it on the WebFOCUS Home Page and clicking **Properties**. The file path is listed as the Path property.

    Slashes (/) between folder names should be retained literally instead of encoded in the URL, and the colon (:) should be removed after *IBFS*. For example:

```
http://localhost:8080/ibi_apps/run/IBFS/WFC/Repository/My_
Workspace/~user/custom.js
```

The full SET JSURL command may resemble the following:

```
SET JSURLS='http://localhost:8080/ibi_
apps/run/IBFS/WFC/Repository/My_Workspace/~user/custom.js';
```

21. Save your changes to edasprof.prf
22. Return to the Hub or Home Page and run your report, then click a drill-down link.

    A new email opens with the To address and Subject line already filled, with different values depending on the link that you click.

Using a JavaScript Drilldown to Run a Chart or Report in a Target Panel on a Page

You can use a specific, pre-configured JavaScript function called portalDispatch to drill to a target chart or report, and run it in a specified target container on a page. This target container can be identified by a CSS class, which you can set using the Classes property for the content area within a container. The target container can be a basic panel container with a single content item, or a multi-content container, such as a tab, accordion, or carousel container, that contains multiple items. If the content area that contains the target item is part of a multi-content container, then it becomes visible immediately when the drilldown is ran. For more information on setting and using CSS classes, see Styling Pages With Custom CSS. The target chart or report, which you evoke to run in the target container, is referenced using the IBFS path, which you can find in the Path field when viewing the properties of an item on the Hub or Home Page. You can pass multiple items to multiple containers listed in sequence, and you can also pass the values of multiple fields from a single drill-down link to multiple parameters in the target item or items.

You can create the drill-down content and your page in three general steps. First, create one or more target charts or reports that you want to run when a drill-down link is clicked. You can add dynamic parameter filters to these items so that they are filtered based on the selected drill-down link. Next, create a chart or report with a drilldown that runs a JavaScript function called portalDispatch. The function arguments determine what items are run, and where they should run. Finally, assemble a page that contains the drill-down content and containers in which the target content can run. You must also ensure that the

portalDispatch JavaScript function is recognized, by specifying the location of the .js file that contains it on the WebFOCUS Reporting Server.

Create the Drill-Down Target Content

First, create one or more target charts or reports using WebFOCUS Designer.

To receive parameter values from your drilldown, the target content must have single select filters. Filters created in InfoAssist are single select by default, while those created in WebFOCUS Designer are multi-select by default, meaning that you must set them to accept a single filter value for them to accept passed parameter values.

Procedure

1. On the WebFOCUS Hub or WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens, where you are prompted to select a data source.

2. Select the data source that you want to use. You should use the same data source for the target content and the parent content containing the drill-down links.

3. Create your target content by adding fields to the appropriate field containers, and applying your preferred customizations and styling options.

4. Add prompted filters to your content, allowing it to be filtered based on the selected drill-down link. The field or fields used to filter the target content should be used as sort fields in the parent content that contains the drilldowns.

   Drag a field from the Data pane to the Filter toolbar. Optionally, select default values for your filters.

   Repeat these steps to allow the target content to accept multiple parameters from a drill-down link.

5. Make all of the prompted filters in your target content single select. Right-click each alphanumeric filter prompt and click **Single**.

6. Save the target chart or report.

7. Repeat steps 1 through 6 to create multiple target charts and reports. The portalDispatch function can invoke and pass parameters to multiple charts and reports at once.

Create Content With JavaScript Drill-Down Links

Create the chart or report that will contain the drill-down links that run the target item or items that you created in the previous set of steps.

Procedure

1. On the WebFOCUS Hub, open the plus menu and click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens, prompting you to select a data source.

2. Select the data source that you want to use. This should be the same data source that you used for the target content in the *How to Create the Drill-Down Target Content* procedure.

3. Create the drill-down parent content, which can be either a chart or report, by adding measure and dimension fields to the appropriate buckets.

   The dimension fields that are used as dynamic parameter filters in the target content should be used as sort fields in the parent content.

4. Add drill-down links to your content. If you are creating a report, right-click a sort field, and if you are creating a chart, right-click a measure field. From the shortcut menu, click **Configure drill downs**.

   The Configure Drill Downs dialog opens.

5. Create a drilldown by clicking the plus sign, **Create New Drill Item**, icon in the pane on the left.

6. Select the **JavaScript** radio button to create a drill-down link that runs a JavaScript function.

7. In the JavaScript Function text box, type **portalDispatch**. This is a pre-existing function that has already been defined in a file in the default WebFOCUS installation.

> **Note:** If the filter in the item that is the target of your drilldown is multi-select, use **multiselect_portalDispatch** instead of **portalDispatch**. Parameter values are passed differently to multi-select and single-select filters, so you must use the drill-down JavaScript function that is compatible with the type of filter that you are using.

8. In the Request Parameters, click the plus button (+) to provide values of arguments in the JavaScript function. Each one occupies its own line in the parameter table. You add at least 6 parameters, with extra parameter-field pairs if you want to pass multiple parameter values to the filters you set up in the target content.

   Specify the following parameter values in the JavaScript drilldown:

   a. Add a new parameter and change the Type to **Value** using the dropdown menu in the Type column. In the Field/Value column, type **drillRefresh**.

   b. Click the plus button again to add another new parameter. Change the Type to **Value** and type **self** in the Field/Value column. Alternatively, if you do not want multi-content containers to immediately switch to display a specific target item, you can use **self | _NO_FOCUS** as the second argument. When using **self** for this argument, multi-content containers switch to show the last specified target item.

   c. Add another new parameter. Change the Type to **Value**, and type the name of a CSS class that will identify the content area of the panel in which the drill-down target content will run.

      For example, if you type **panel1** in the Field/Value column when configuring the drill-down parameters, you need to add **panel1** to the Classes property of the content area of the container in the page where the drill-down content runs.

      You can run multiple content items to multiple containers from the same drill-down link, in which case the class names should be separated by spaces. For example, **panel1 panel2**.

      If you want to pass the same drill-down parameters to all panels on the page, use the **_ALL** argument and skip the next sub-step.

   d. Add another new parameter. Change the Type to **Value**, and type or paste the IBFS path of the target content that you created in the *How to Create the Drill-Down Target Content* procedure.

      To find the IBFS path of an item, right-click it on the Hub or Home Page and

click **Properties**. The IBFS path of the item is listed in the Path field. You can copy it to paste into the Field/Value column when configuring the parameter for the target content.

If you want to run multiple content items, separate them with spaces. The order of the paths should be coordinated with the order of the container classes specified in step 8c. The first listed target item runs in the container with the first specified class, the second listed item runs in the container with the second specified class, and so on.

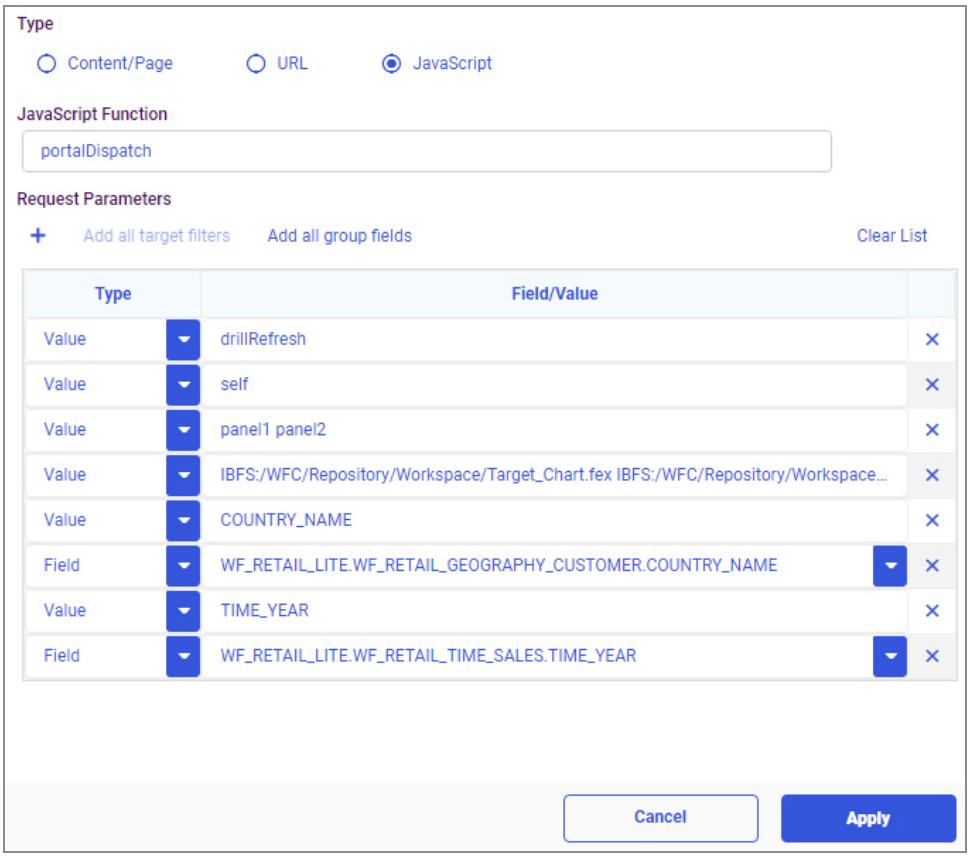
This value is not necessary if the procedure that you want to refresh is present on the page in the container content area with the class specified in step 8c. If this is the case, you may omit this argument of the drilldown and proceed to step 8e.

e. Add another new parameter. Change the Type to **Value**, and, in the Field/Value column, type the name of the parameter used to filter the target content. By default, this is the name of the field.

f. Add another new parameter. Leave the Type as **Field**, and, in the Field/Value column, select the field associated with the parameter name provided in step 8e.

g. If the target content has multiple dynamic parameter filters, repeat steps 8e and 8f to supply the other parameters as name-field pairs.

h. Once you have added all parameters to the drilldown, your drill-down configuration may resemble the one shown in the following image.



i. Click **Apply** to generate the drill-down links in your chart or report.

   Your content now runs the portalDispatch JavaScript function when you click a value that includes drilldowns.

   Next, create a page with containers where the target content will be run.

Create a Page to Run the Drill-Down Target Content

Create a page to which you add the content containing the drill-down links that you just created, and enough additional panels to run the content items that you set to run when a drilldown is ran. These panels are identified by the classes set in step 8c of the previous procedure.

Before running the drilldowns, you must also specify the path to the file containing the JavaScript function in the edasprof.prf server profile.

Procedure

1. On the Hub or Home Page, click the plus button and then click **Assemble Visualizations**.
2. You are first prompted to select a page template. You can select one of the preset options, or select **Blank** to add your own containers to the page.

   The WebFOCUS Designer canvas opens.
3. Assemble the page where the target content created in the *How to Create the Drill-Down Target Content* procedure loads when you click a drill-down link in the item created in the *How to Create Content with JavaScript Drill-Down Links* procedure.

   a. With the Content tab selected on the sidebar, navigate to the item that you created in *How to Create Content with JavaScript Drill-Down Links*, and drag it into a container or an empty area of the page.

      The item with the drilldowns displays on the page. Resize it as needed.

   b. Add a container for each drill-down target item created in *How to Create the Drill-Down Target Content*. The container can be empty, or contain an item that will be replaced with the drill-down target item. If you selected a page template, there may be containers available already. Note that you can have these items run in separate tabs, accordion panels, or slides of multi-content container.

   c. Select the content area of a target container by clicking inside it. On the **Settings** tab, in the Classes text box, type the name of the first class that you defined in step 8c of *How to Create Content with JavaScript Drill-Down Links*.

      If the content area that you select is part of a tab, accordion, or carousel container, when you run the drilldown, the container immediately updates to display the target item. Alternatively, if you do not want to change the displayed items, you can use the **self | _NO_FOCUS** as the second argument.

      Repeat this step for any additional containers in which you want to run other content items, specified in step 8d of *How to Create Content with JavaScript Drill-Down Links*, using the class names defined in step 8c of that procedure.
4. Now that the content has been added and the containers have their classes set, save the page.
5. Finally, we must tell our report request where the custom JavaScript function is defined. We can use the SET JSURLS command to specify the location of the .js file in

the WebFOCUS installation that includes the portalDispatch function. The SET JSURLS command can be added to the edasprof server profile to make it available to all procedures. This step must be performed by someone with administrative privileges on the WebFOCUS Reporting Server.

> **Note:** As an alternative, you can add the SET JSURLS command to the Preprocessing Other component of a Reporting Object, then use it as the data source for your content.

a. On the WebFOCUS Hub, click **Management Center** and then click **Server Workspaces**.

   Or, on the WebFOCUS Home Page, open the plus menu and click **Prepare and Manage Data**.

   In the WebFOCUS Reporting Server browser interface, open the **Tools** menu and click **Workspace**.

   The Server Workspace view opens.

b. On the resource tree, expand **Configuration Files**, then right-click **Server Profile - edasprof.prf** and click **Edit**.

c. On a new line, type **SET JSURLS = '/ibi_apps/tools/portalcanvas/iframeinterface.js'**

   The partial URL points to the location in your WebFOCUS installation where the portalDispatch JavaScript function is defined. Note that if the context root of your installation is not ibi_apps, you must replace this part of the path with the custom context root that you are using.

d. Save your changes to edasprof.prf

6. Now that the JavaScript function is enabled, return to the Hub or Home Page, and run the WebFOCUS Designer page. Right-click the page, and click **Run in new window**.

   The page runs in a new browser tab. Click a drill-down link in the parent item created in *How to Create Content with JavaScript Drill-Down Links*. One or more target items, created in *How to Create the Drill-Down Target Content*, run in another container on the page. These items are also filtered based on the value that you clicked, since you specified the parameter name and field when setting up the JavaScript function.

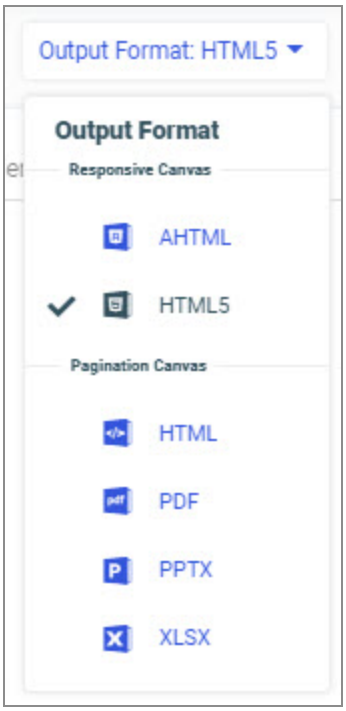
7. Optionally, click more drill-down links to update the filter values applied to the target content, or click the **Refresh** button on the page toolbar or container menu to reset the contents of the page.

Changing Output Formats in a Chart or Report

The output format of your content determines the type of file that is generated when that content is run. Different output types enable different levels of run-time interactivity, embedding behavior, and compatibility with outside programs, so you can change the output type depending on how you intend to use your content and who the intended audience is.

You can change the output format for stand-alone charts and reports. Charts and reports created as part of a multi-content visualization use the Interactive output format, which provides run-time features such as tooltips, drill-downs, and on-chart filtering.

To change the output format of a stand-alone chart or report created in WebFOCUS Designer, use the Output Format menu on the Visualization toolbar. The Output Format menu is shown in the following image:



The following output format options are available:

- AHTML
- HTML5
- HTML
- PDF
- PPTX
- XLSX
- CSV
- JSON
- XML

At design time, the AHTML and HTML5 output formats use the responsive canvas. When using the responsive canvas, reports present In-Document Analytic paging controls at the bottom of the canvas that allow you to navigate through the pages of report. Some report styling properties are unavailable when using the responsive canvas. Charts in the AHTML and HTML5 output formats present informational tooltips and allow on-canvas filtering at design time.

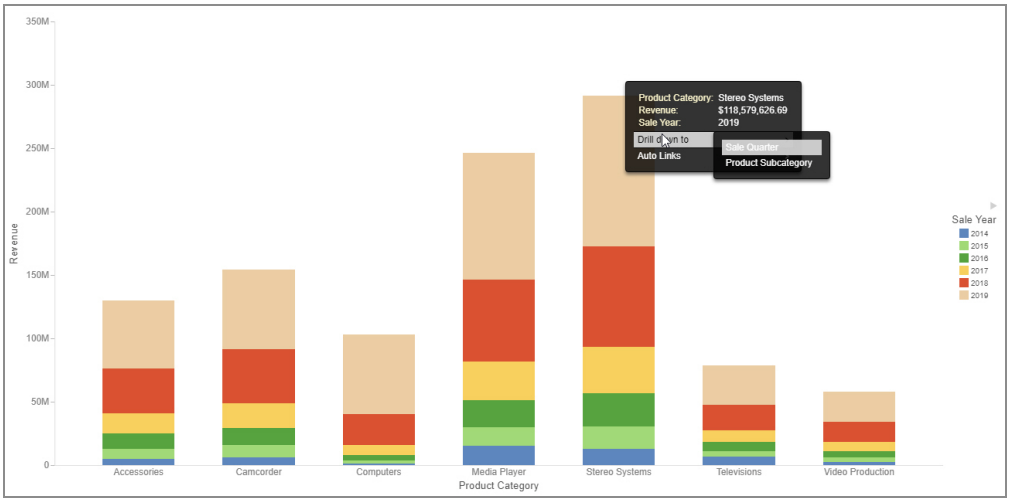
The HTML, PDF, PPTX, and XLSX output formats use a paginated canvas at design time. Some report styling properties are only available when using the paginated canvas. You can scroll through an entire report using a scrollbar. Charts using the paginated canvas do not present interactive options, such as tooltips.

At run time, the HTML5 and HTML output formats are functionally equivalent. The two options are available to allow you to use the two different canvas types.

When you run your content, the HTML, HTML5, and AHTML options are browser-based formats, while PDF, PPTX, and XLSX output can be downloaded, distributed, and opened using standard office suite software. The Select at runtime option provides the ability to run a chart using any of the other output formats. Users can select a format at runtime from a filter control.

When creating a chart, the HTML and HTML5 output formats generate a basic chart, enhanced with JSON objects, that can be run in a web browser. The HTML and HTML5 chart formats automatically generate tooltips for different sections of a chart, allowing you to see detailed information at run-time on top of the quick, broad intuitions that a chart communicates. These tooltips provide run-time access to interactive features such as Auto Drill, which allows you to drill into data hierarchies used in the chart, and Auto Linking, which allows you to connect content that uses shared parameters associated with sort

fields in the chart. The following image shows a chart that uses the HTML5 output format and has Auto Drill and Auto Linking options available from the tooltip.



The HTML5 format also enables you to run your chart with Insight, which allows you to modify, filter, and reformat a chart at run-time.

When creating a report, meanwhile, the HTML and HTML5 output formats generate a basic report that can be run in a web browser. The simplicity of the HTML and HTML5 output formats make them extremely flexible. Run-time interactivity is available in the form of hyperlinks, which provide access to Auto Drill and Auto Linking. An example of an HTML report with Auto Drill hyperlink behavior is shown in the following image.

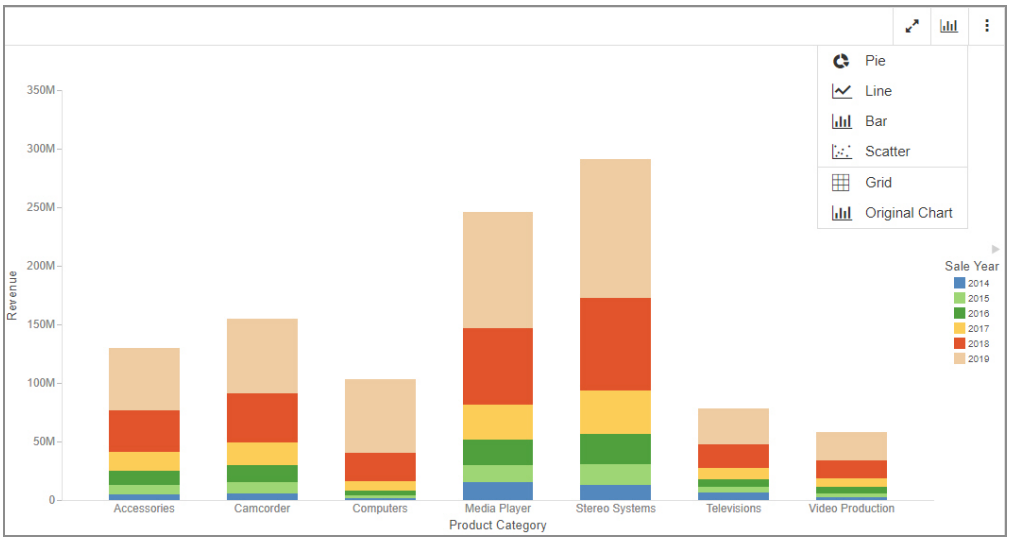
	Sale,Quarter	1		2		3		4	
Product Category	Sale Year	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue
Accessories	2014	4,580	$1,125,123.02	4,662	$1,165,106.04	4,783	$1,270,872.45	6,127	$1,478,196.03
	2015	7,121	$1,800,068.41	7,323	$1,827,354.16	7,893	$1,964,121.52	9,059	$2,268,524.86
	2016	11,964	$3,048,787.53	10,713	$2,695,679.25	11,049	$2,760,894.18	13,009	$3,315,315.07
	2017	15,189	$3,856,929.56	14,650	$3,730,642.80	15,111	$3,775,155.51	18,886	$4,697,687.80
	2018	34,997	$8,809,572.78	32,276	$8,215,049.12	33,054	$8,427,452.01	39,650	$10,167,798.95
	2019	51,241	$13,036,443.49	47,565	$12,109,135.49	48,256	$12,253,631.10	62,509	$15,808,797.46
Camcorder	2014	3,873	$1,225,199.72	3,812	$1,244,408.92	4,346	$1,536,974.19	5,691	$1,871,848.75
	2015	6,469	$2,304,019.65	6,475	$2,073,189.24	7,209	$2,529,194.52	8,332	$2,766,844.75
	2016	10,199	$3,452,156.37	9,996	$3,339,495.11	9,835	$3,385,661.95	11,220	$3,794,394.66
	2017	13,600	$4,719,651.07	12,977	$4,445,789.78	13,637	$4,586,985.06	16,568	$5,686,181.94
	2018	30,756	$10,425,741.77	29,016	$10,061,991.48	29,017	$9,849,105.88	35,183	$12,059,700.43
	2019	45,900	$15,459,486.09	42,599	$14,567,964.98	43,451	$14,740,206.14	55,083	$18,339,509.76
Computers	2014	1,343	$302,839.60	1,235	$285,463.66	1,659	$349,989.27	2,493	$503,542.67
	2015	2,723	$545,285.69	2,726	$555,012.38	3,170	$646,064.08	3,620	$733,129.43
	2016	4,622	$935,868.89	4,211	$859,932.09	4,579	$969,684.35	6,408	$1,405,264.26
	2017	8,402	$1,906,405.31	7,673	$1,740,392.33	8,479	$1,920,150.64	10,072	$2,290,980.27
	2018	18,840	$4,285,100.36	19,734	$5,003,619.59	23,240	$6,809,161.08	27,812	$8,078,594.30
	2019	42,608	$13,540,748.18	47,842	$15,212,365.79	48,512	$15,856,387.06	49,774	$18,580,500.85
Media Player	2014	11,717	$3,427,197.08	11,618	$3,268,394.69	12,688	$3,585,613.72	14,943	$4,699,372.86
	2015	12,067	$3,851,602.64	10,264	$3,313,925.34	11,422	$3,727,532.88	13,379	$4,239,470.35
	2016	16,372	$5,239,161.93	15,304	$4,981,985.38	15,931	$5,098,038.72	18,700	$6,084,901.35
	2017	22,232	$7,239,959.35	20,932	$6,793,086.13	22,342	$7,327,768.51	26,929	$8,744,386.06
	2018	49,727	$16,237,411.66	46,876	$15,328,987.92	46,539	$15,106,657.25	56,169	$18,329,370.14

Charts and reports using the AHTML format can also be run in a web browser. AHTML is a format that allows you to perform offline analysis using in-document analytic features. The AHTML format allows you to use Auto Drill and Auto Linking functionalities just like HTML. In addition to this, AHTML enables numerous features that allow you to reorganize and

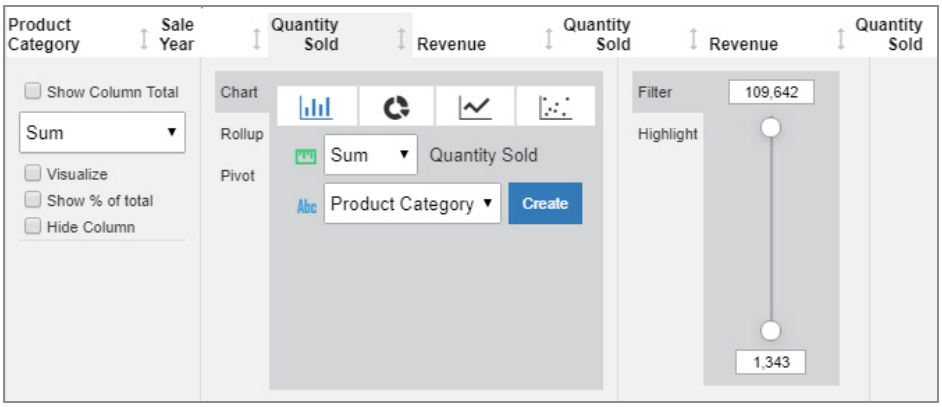
explore the data in an analytic chart without directly accessing the data source on which it is based. This includes the ability to filter the chart by lassoing values, view the data in the chart as a different chart type using the Chart Types menu, and create a new chart using the same fields while still in run time, download the chart, and more using the Options menu. When active content is placed within a container on a page, a single toolbar provides access to both the container options and the available active content options. The In-Document Analytics run-time menu is now also available in tab, accordion, and carousel containers when they contain content that uses the AHTML output format. This is not enabled by default. You need to add the below mention code in the STYLE block of the report.

```
*TABLE_JS
       "settings":
                        {
                           "usePageMenu": true
                        }
*END
```

An analytic chart with the Chart Types menu open is shown in the following image.



When the AHTML format is used in a report, in addition to the Options menu above the report, you can click a column header to filter the report, view the data in the report as a chart, and more. A menu of options appears, allowing you to explore and transform the report, as shown in the following image.



You can also click the arrows above each column header to sort the report by the values in that column.

When a chart or report using the AHTML output format is added to an assembled page, the Options menu becomes part of the container toolbar. It allows you to access the Chart/Rollup Tool to create new content from the same set of fields used in the original content, move the fields in a chart to different buckets, export, save, or print your content, and more.

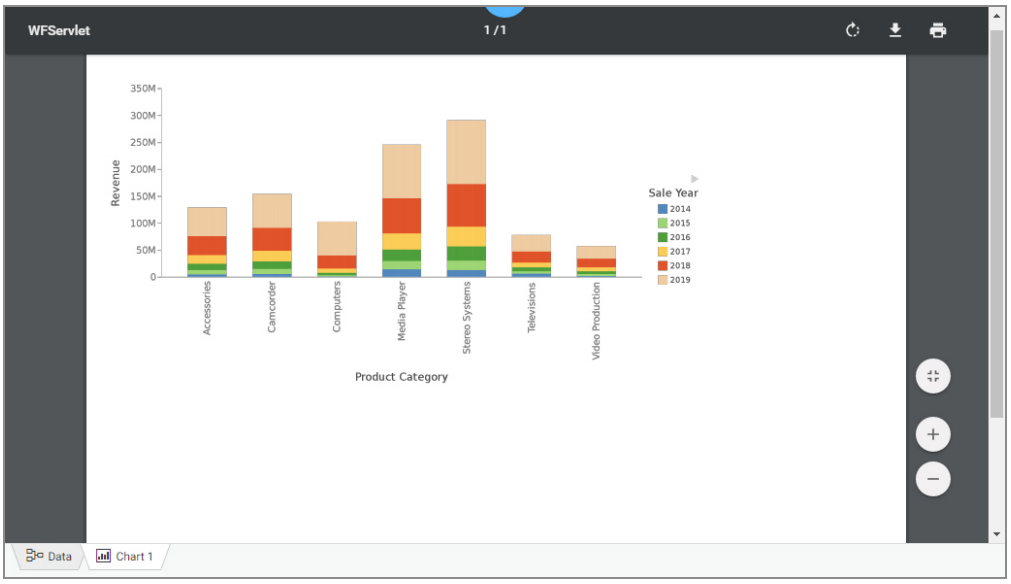
To access your content in common desktop tools, use the PDF, PPTX, or XLSX output formats.

When you run content that uses PDF, PPTX, or XLSX as the output format, a file is created in a .pdf, .pptx, or .xlsx format, respectively. The file opens in a browser viewer for that file type or is downloaded in the browser. The file can be opened using a tool compatible with the output file type. When the item is a chart, an image of the chart is embedded in the file. If the tool allows it, you can then right-click the image of the chart to save it as a separate image file.

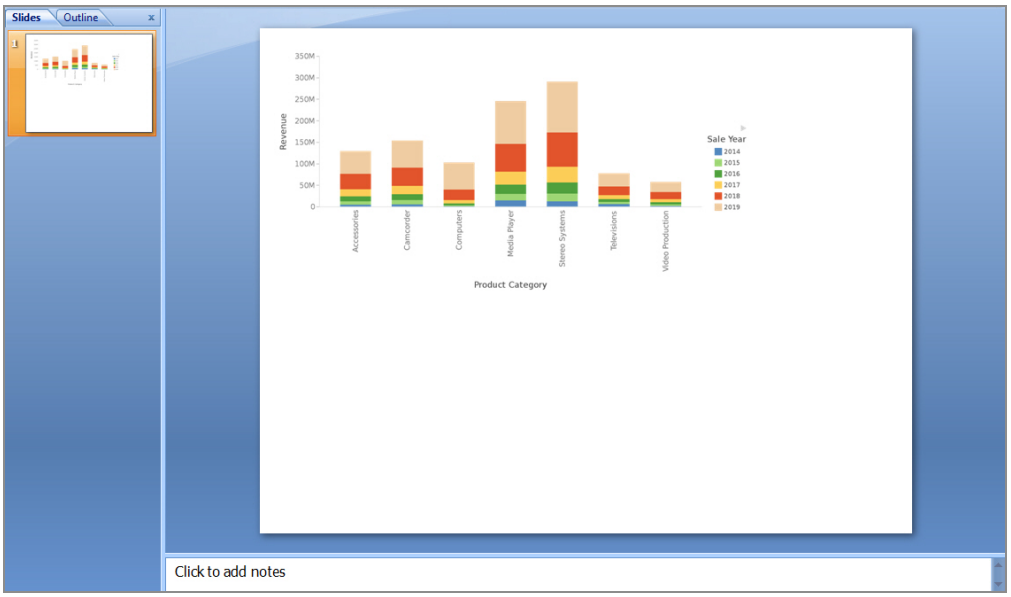
Certain features may not be available, depending on the file type. For example, the PDF, PPTX, and XLSX output formats do not support Auto Linking, Auto Drill, or any other tooltip-based behavior, since a single, self-contained file is created. When using XLSX FORMULA, the Excel output uses formulas for COMPUTE fields instead of just having a fixed value, so changes to other values directly in the spreadsheet updates those values.

Separate pages generated by page breaks or by the MultiPage bucket also behave differently, depending on the output file type. In PDF, a separate page is created for each page break or multipage value, and in PPTX, a separate slide is created. In Excel, however, separate pages are output to the same worksheet, similar to how page breaks and multipage values display in the HTML output format.

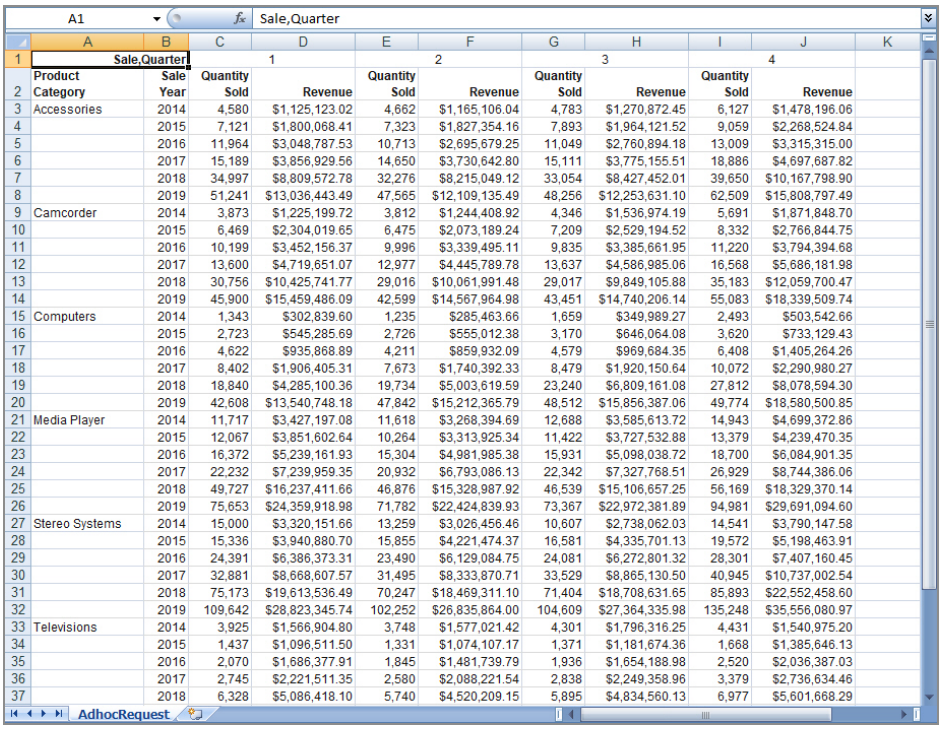
The following image shows an example of a chart created using the PDF output format viewed in a web browser.



The following image shows an example of a chart created using the PPTX output format viewed in Microsoft PowerPoint 2007.



The following image shows an example of a report created using the XLSX output format viewed in Excel 2007.



	Sale,Quarter		1		2		3		4	
	Product Category	Sale Year	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue
3	Accessories	2014	4,580	$1,125,123.02	4,662	$1,165,106.04	4,783	$1,270,872.45	6,127	$1,478,196.06
4		2015	7,121	$1,800,068.41	7,323	$1,827,354.16	7,893	$1,964,121.52	9,059	$2,268,524.84
5		2016	11,964	$3,048,787.53	10,713	$2,695,679.25	11,049	$2,760,894.18	13,009	$3,315,315.00
6		2017	15,189	$3,856,929.56	14,650	$3,730,642.80	15,111	$3,775,155.51	18,886	$4,697,687.82
7		2018	34,997	$8,809,572.78	32,276	$8,215,049.12	33,054	$8,427,452.01	39,650	$10,167,798.90
8		2019	51,241	$13,036,443.49	47,565	$12,109,135.49	48,256	$12,253,631.10	62,509	$15,808,797.49
9	Camcorder	2014	3,873	$1,225,199.72	3,812	$1,244,408.92	4,346	$1,536,974.19	5,691	$1,871,848.70
10		2015	6,469	$2,304,019.65	6,475	$2,073,189.24	7,209	$2,529,194.52	8,332	$2,766,844.75
11		2016	10,199	$3,452,156.37	9,996	$3,339,495.11	9,835	$3,385,661.95	11,220	$3,794,394.68
12		2017	13,600	$4,719,651.07	12,977	$4,445,789.78	13,637	$4,586,985.06	16,568	$5,686,181.98
13		2018	30,756	$10,425,741.77	29,016	$10,061,991.48	29,017	$9,849,105.88	35,183	$12,059,700.47
14		2019	45,900	$15,459,486.09	42,599	$14,567,964.98	43,451	$14,740,206.14	55,083	$18,339,509.74
15	Computers	2014	1,343	$302,839.60	1,235	$285,463.66	1,659	$349,989.27	2,493	$503,542.66
16		2015	2,723	$545,285.69	2,726	$555,012.38	3,170	$646,064.08	3,620	$733,129.43
17		2016	4,622	$935,868.89	4,211	$859,932.09	4,579	$969,684.35	6,408	$1,405,264.26
18		2017	8,402	$1,906,405.31	7,673	$1,740,392.33	8,479	$1,920,150.64	10,072	$2,290,980.27
19		2018	18,840	$4,285,100.36	19,734	$5,003,619.59	23,240	$6,809,161.08	27,812	$8,078,594.30
20		2019	42,608	$13,540,748.18	47,842	$15,212,365.79	48,512	$15,856,387.06	49,774	$18,580,500.85
21	Media Player	2014	11,717	$3,427,197.08	11,618	$3,268,394.69	12,688	$3,585,613.72	14,943	$4,699,372.86
22		2015	12,067	$3,851,602.64	10,264	$3,313,925.34	11,422	$3,727,532.88	13,379	$4,239,470.35
23		2016	16,372	$5,239,161.93	15,304	$4,981,985.38	15,931	$5,098,038.72	18,700	$6,084,901.35
24		2017	22,232	$7,239,959.35	20,932	$6,793,086.13	22,342	$7,327,768.51	26,929	$8,744,386.06
25		2018	49,727	$16,237,411.66	46,876	$15,328,987.92	46,539	$15,106,657.25	56,169	$18,329,370.14
26		2019	75,653	$24,359,918.98	71,782	$22,424,839.93	73,367	$22,972,381.89	94,981	$29,691,094.60
27	Stereo Systems	2014	15,000	$3,320,151.66	13,259	$3,026,456.46	10,607	$2,738,062.03	14,541	$3,790,147.58
28		2015	15,336	$3,940,880.70	15,855	$4,221,474.37	16,581	$4,335,701.13	19,572	$5,198,463.91
29		2016	24,391	$6,386,373.31	23,490	$6,129,084.75	24,081	$6,272,801.32	28,301	$7,407,160.45
30		2017	32,881	$8,668,607.57	31,495	$8,333,870.71	33,529	$8,865,130.50	40,945	$10,737,002.54
31		2018	75,173	$19,613,536.49	70,247	$18,469,311.10	71,404	$18,708,631.65	85,893	$22,552,458.60
32		2019	109,642	$28,823,345.74	102,252	$26,835,864.00	104,609	$27,364,335.98	135,248	$35,556,080.97
33	Televisions	2014	3,925	$1,566,904.80	3,748	$1,577,021.42	4,301	$1,796,316.25	4,431	$1,540,975.20
34		2015	1,437	$1,096,511.50	1,331	$1,074,107.17	1,371	$1,181,674.36	1,668	$1,385,646.13
35		2016	2,070	$1,686,377.91	1,845	$1,481,739.79	1,936	$1,654,188.98	2,520	$2,036,387.03
36		2017	2,745	$2,221,511.35	2,580	$2,088,221.54	2,838	$2,249,358.96	3,379	$2,736,634.46
37		2018	6,328	$5,086,418.10	5,740	$4,520,209.15	5,895	$4,834,560.13	6,977	$5,601,668.29

The following image shows an example of a report created using the JSON output format.

{"records" : [
{"PRODUCT_CATEGORY" : "Accessories","DISCOUNT_US" : 6014845.52,"COGS_US" : 89753898.00}
{"PRODUCT_CATEGORY" : "Camcorder","DISCOUNT_US" : 7108400.27,"COGS_US" : 104866857.00}
{"PRODUCT_CATEGORY" : "Computers","DISCOUNT_US" : 4808910.10,"COGS_US" : 69807664.00}
{"PRODUCT_CATEGORY" : "Media Player","DISCOUNT_US" : 11519142.41,"COGS_US" : 190240481.00}
{"PRODUCT_CATEGORY" : "Stereo Systems","DISCOUNT_US" : 13530873.57,"COGS_US" : 205113863.00}
{"PRODUCT_CATEGORY" : "Televisions","DISCOUNT_US" : 3635693.38,"COGS_US" : 61551109.00}
{"PRODUCT_CATEGORY" : "Video Production","DISCOUNT_US" : 2695890.76,"COGS_US" : 40105657.00}
]}

When you run the content that uses JSON as the output format, a file is created in a .json file extension. The file opens in a browser viewer for that file type or is downloaded in the browser. This output format is only available when creating a report using a standard or grid layout. Certain features may not be available, depending on the file type. For example, the JSON output formats do not support Auto Linking, Auto Drill, or any other tooltip-based behavior, since a single, self-contained file is created.

The following image shows an example of a report created using the XML output format.

When you run the content that uses XML as the output format, a file is created in a .xml file extension. The file opens in a browser viewer for that file type or is downloaded in the browser. This output format is only available when creating a report using a standard or grid layout. Certain features may not be available, depending on the file type. For example, the XML output formats do not support Auto Linking, Auto Drill, or any other tooltip-based behavior, since a single, self-contained file is created.

Note: In case you run into an Excel Server URL error when you select XLSX or PPTX, Change the Excel Server URL setting in Client Settings in the admin console.

Overview of In-Document Analytics

Setting the output format of a stand-alone chart or report to AHTML provides In-Document Analytic capabilities at run-time. Content that uses In-Document Analytics provides users with an interactive interface that allows the generation of real-time, dynamic charts and reports. Its versatility not only allows you to interact with your content by adding filters, sorting data, and generating new content, but it also allows for offline content access. You can package a data set with a combination of analytical views, resulting in highly intuitive and interactive self-service business intelligence. This gives you an edge in presentation and analysis, making it easy to develop and share concepts, ideas, and scenarios. An interactive report is a self-contained report, meaning that it contains all the data and JavaScript® within the HTML output file. Packaging the data and the interactive functions in the HTML file also makes the output highly compressible for email and transparent to

security systems. If you are working with a larger data set, you can also zip the output files to reduce the file size when sending them through email.

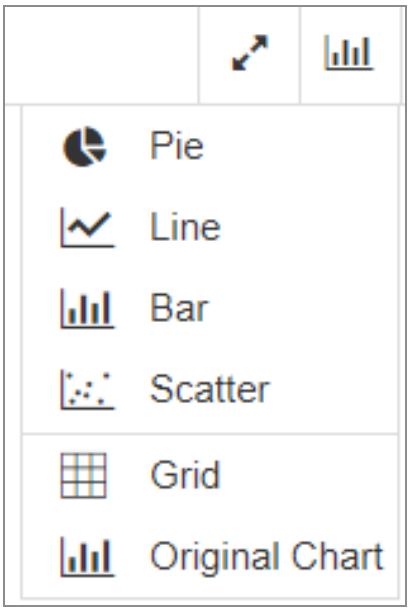
Note: : You may need to zip interactive content output files to reduce the file size, and send them through your email client.

Your users can explore and interact with your data using various analytical tools such as sorting, filtering, calculations, roll-ups, and pivoting. They can also experiment with different scenarios using various options.

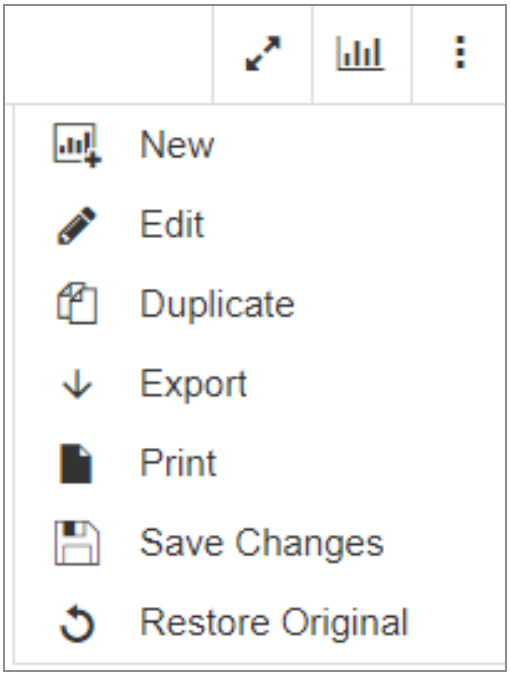
All of the interactive content that you create functions independently of a server, and is portable, making it easy for your users to work with and analyze complex data without requiring the use of an external application, such as Microsoft Excel. With two types of users (developer and end user), the roles in development and delivery of materials are clear. The end user interacts with the content that the developer creates and deploys. They can obtain content without any additional plug-ins or programs should they choose to access your content remotely or offline, independent of a server.

Note: : Each artifact that you create at run time is given a unique number for easy identification. This number is incremental but not consecutive, and is assigned automatically.

When you run content using an AHTML output format, you can review and continue to develop it using the available menus. For example, when you run a chart, you can select the chart menu to change the type of chart you are showing, as shown in the following image.



To add a new chart or edit your content, you can use the options available from the vertical Ellipsis menu, which is shown in the following image.



When you view your report or chart at full screen, a hamburger menu also displays, as shown in the following image. From this menu, you can exit full screen, save changes, or restore the dashboard.

For more information on In-Document Analytics, see the *ibi™ WebFOCUS® In-Document Analytics User's Guide*.

Generating a Data Extract or Image From Content

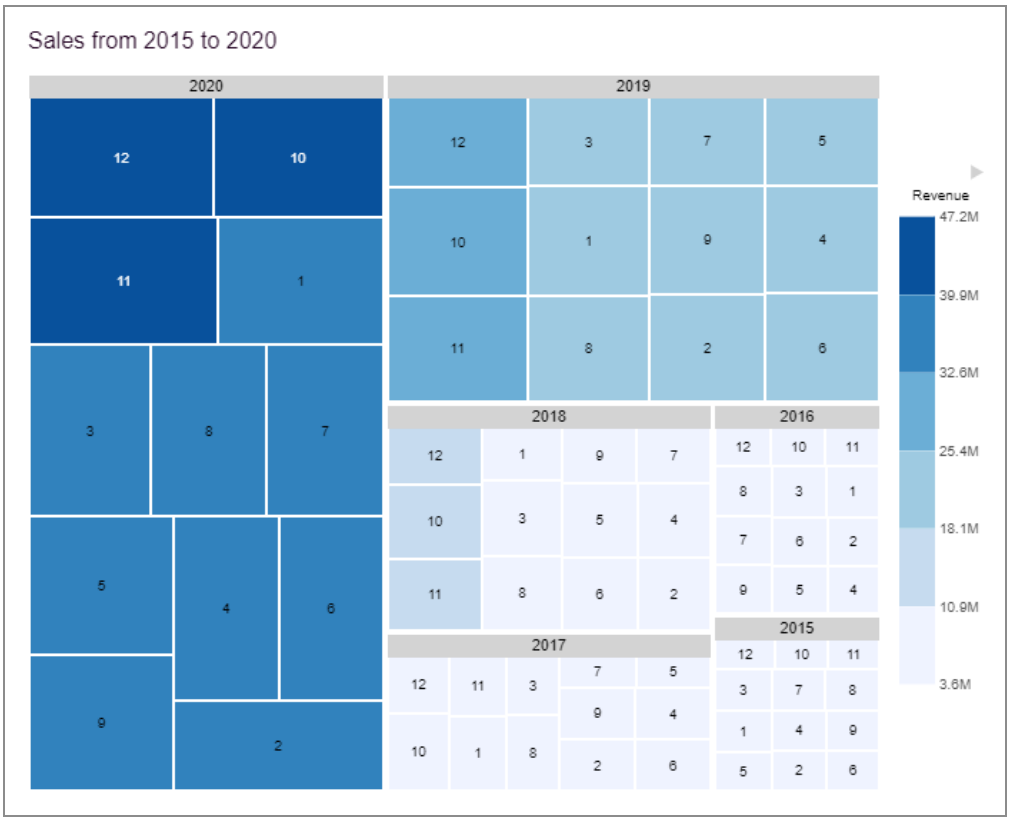
In addition to the output formats that you can use when running your content, you can export a snapshot of a single chart or report as a data extract in an Excel spreadsheet, or as a .png image, which is downloaded from your browser. This allows you to quickly generate a representation of your content at any time, in a format that can be easily saved and distributed.

To generate the image or data extract, click the **Application** menu and, in the Export As section, click **Data** or **Image**. The file is downloaded using your browser.

When you export a data extract of your chart or report, it is downloaded as an Excel spreadsheet with the data displayed as a tabular report. This can help identify the precise values that are graphically represented in your chart. A spreadsheet is also easy to distribute. The following image shows part of the spreadsheet created by exporting a treemap chart as a data extract.

	A	B	C	D	E
1	Sale Year	Sale Month	Revenue	Quantity Sold	
2	2015	1	$3,874,651.96	14,128	
3		2	$3,592,608.63	13,362	
4		3	$3,977,546.75	14,668	
5		4	$3,648,111.77	13,403	
6		5	$3,704,586.77	13,671	
7		6	$3,694,435.21	12,991	
8		7	$4,020,855.35	13,637	
9		8	$4,126,310.80	13,561	
10		9	$3,688,054.34	13,095	
11		10	$4,794,720.40	16,292	
12		11	$4,574,636.32	15,917	
13		12	$5,268,550.91	18,692	
14	2016	1	$4,857,824.42	16,428	
15		2	$4,595,194.63	15,093	
16		3	$4,923,408.26	16,488	
17		4	$4,422,610.34	14,770	
18		5	$4,586,992.98	15,562	
19		6	$4,856,111.47	16,382	
20		7	$5,075,337.19	16,945	
21		8	$5,133,075.08	17,061	
22		9	$5,031,634.54	16,629	
23		10	$5,826,745.45	19,620	
24		11	$5,788,867.16	19,277	
25		12	$6,043,161.45	20,360	
26	2017	1	$7,528,276.32	25,445	
27		2	$7,020,137.82	23,245	
28		3	$7,489,822.31	25,298	
29		4	$6,811,513.41	23,095	

When you export an image, a snapshot of the item is taken as it currently exists, and saved in .png format. Headers, footers, and legends are included in the image, but external items such as filter controls are not. The following image, showing a treemap chart, was exported directly from WebFOCUS Designer.



Once exported, you can open the image using a program on your machine capable of opening .png images, distribute the image, and even use it as a thumbnail for your content once you save it. To set a thumbnail, right-click the saved chart or report on the WebFOCUS Hub or WebFOCUS Home Page and click **Properties**. On the **Advanced** tab, select the **Embedded** thumbnail option and browse to the location where the exported image was saved. The thumbnail makes it easier to identify a content item on the WebFOCUS Hub or WebFOCUS Home Page, or in the Resources tree when assembling a visualization in WebFOCUS Designer.

Generating Insights in ibi WebFOCUS Designer

You can easily run advanced analyses and generate visualizations and narratives on your data sets, without manually preparing and analyzing your data, or having prior knowledge of data science or statistics.

With one click, the Insights capabilities in WebFOCUS Designer recognize trends in your data, generate customizable visualizations as charts with natural language headers, and categorize the charts into tabs. You can add these charts to the WebFOCUS Designer

canvas and build a page, or add them to existing pages or dashboards. Then you can save and share your insights with others.

> **Note:** For installation information, see the *ibi™ WebFOCUS® Installation and Configuration* manual for your platform.

With one click, the Insights capabilities in WebFOCUS Designer recognize trends in your data, generate customizable visualizations as charts with natural language headers, and categorize the charts into tabs. You can add these charts to the WebFOCUS Designer canvas and build a page, or add them to existing pages or dashboards. Then you can save and share your insights with others.

> **Note:** For installation information, see the *ibi™ WebFOCUS® Installation and Configuration* manual for your platform.

Access Insights

You can access the Insights capabilities in the following ways:

- **In WebFOCUS Designer.** From the WebFOCUS Hub, click the plus menu, and then click **Create Visualizations**, or, from the WebFOCUS Home Page, click **Visualize Data**. Then select a data source from the dialog.
- **In the WebFOCUS Hub.** Click the plus menu, and then click **Explore Data**. Then select a data source from the dialog.
- **After Uploading a Data File.** From the WebFOCUS Hub, click the plus menu, and then click **Get Data**, or, from the WebFOCUS Home Page, click **Get Data**. Then select a file type, select a data source from the dialog, click **Load**, and then click **Visualizations**.
- **After Connecting to a Data Source.** From the WebFOCUS Hub, click the plus menu, and then click **Get Data**, or, from the WebFOCUS Home Page, click **Get Data**. Then click a configured adapter, click an available connection, select a data source from the dialog, and click **Add**.

For more information, see *Uploading Data Files* and *Connecting to Data Sources*.

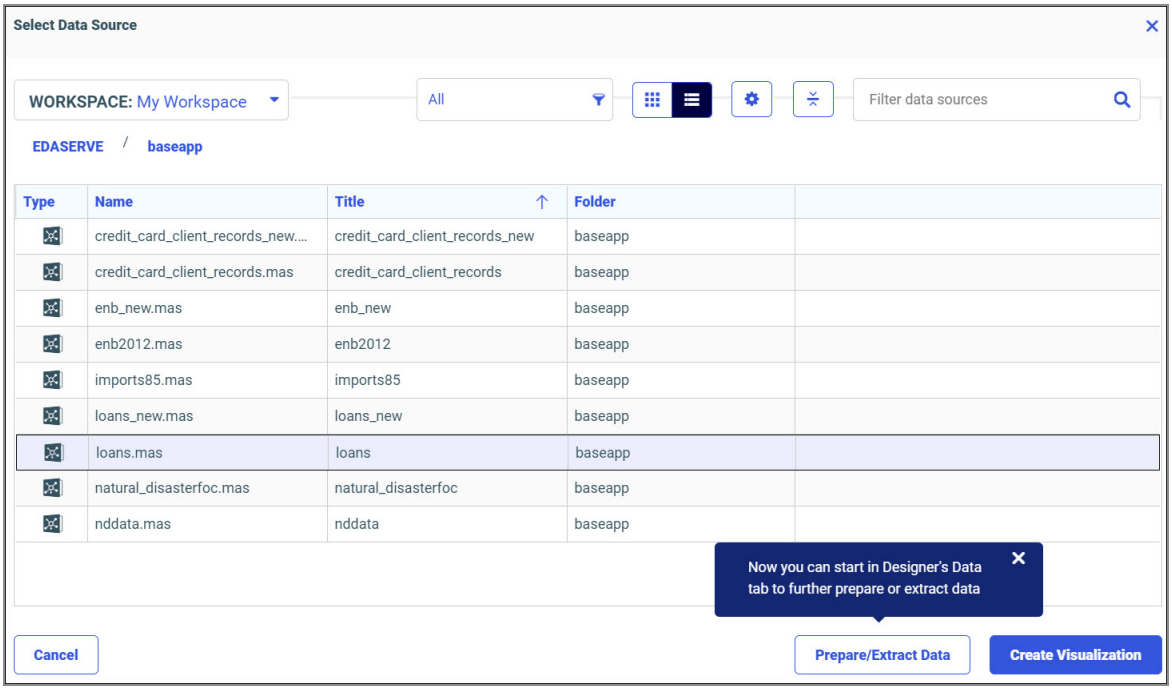
Generate Insights

You can generate visualizations that give you insights into your data.

Procedure

1. From the WebFOCUS Hub, click the plus menu, and then click **Create Visualizations**, or, from the WebFOCUS Home Page, click **Visualize Data**.

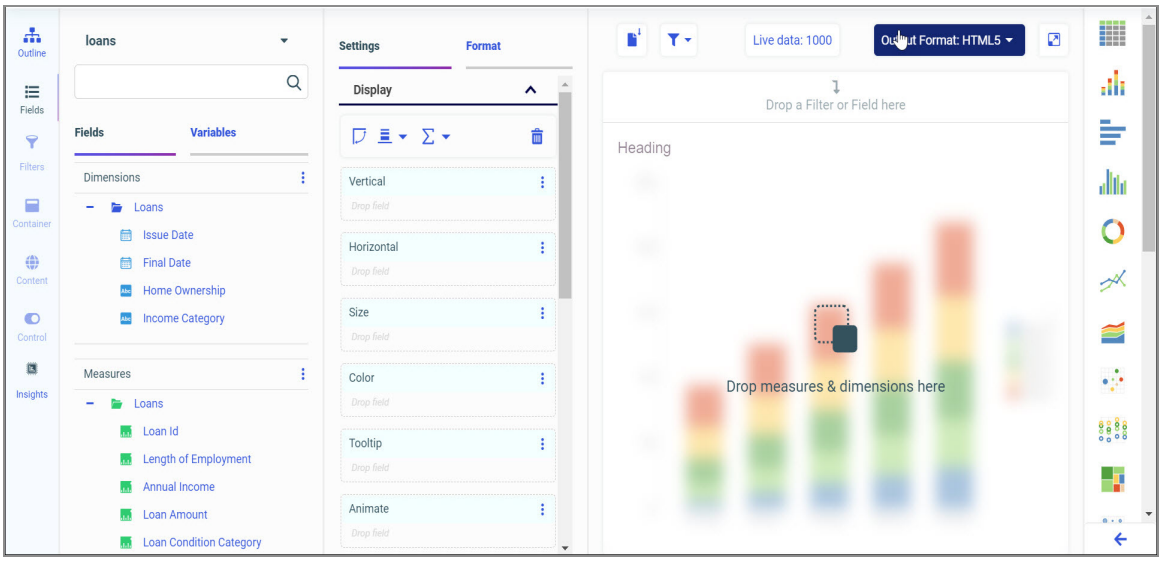
   The Select Data Source dialog opens, as shown in the following image.



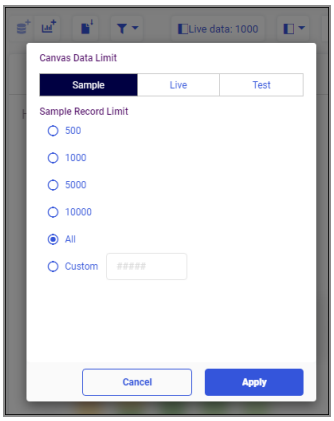
2. Select a data source from which you want to generate insights.
3. Click **Create Visualization** to generate insights in WebFOCUS Designer's Visualization tab.

   > **Note:** You can click **Prepare/Extract Data** to further prepare or extract data in WebFOCUS Designer's Data tab.

   The WebFOCUS Designer Visualization tab opens, as shown in the following image.



To ensure the most meaningful insights, set the canvas sample data limit to **All**. From the Visualization toolbar, click the canvas data limit button Live data: 1000, click the dialog **Sample** tab, select **All**, and click **Apply**, as shown in the following image:



Note: Insights based on datasets with more than 100,000 records use representative sampling of 100,000 data points.

4. From the sidebar, click **Insights**.

Note: If your data set contains multiple tables, you are given the option to select the table from which you want to generate insights, as shown in the following image.

The Insights panel opens and begins analyzing your data. You can continue working in WebFOCUS Designer while your data is being analyzed. A pop-up message appears to alert you when your insights are ready.

The total number of insights generated, with a time stamp, is displayed. If your data is dynamic, you can click the refresh icon to gain updated insights.

Your insights display as visualizations, or charts, in different accordions, which can be collapsed or expanded. Each insight includes an automated, header narrative that explains the trends in your data. Click the **Action** icon to run your chart in a new window, save your chart to a workspace, or copy your chart to the WebFOCUS Designer canvas.

Depending on your data set, your insights are generated and categorized into the following tabs:

- **Single Columns**. Displays results for single columns of data. Insights can show dominances and distributions.
- **Pairs of Columns**. Displays results for pairs of columns of data. Insights can show correlations and associations.
- **Time-series**. Displays results for single columns of data that change over time. Insights can show seasonality, trend, and outliers.

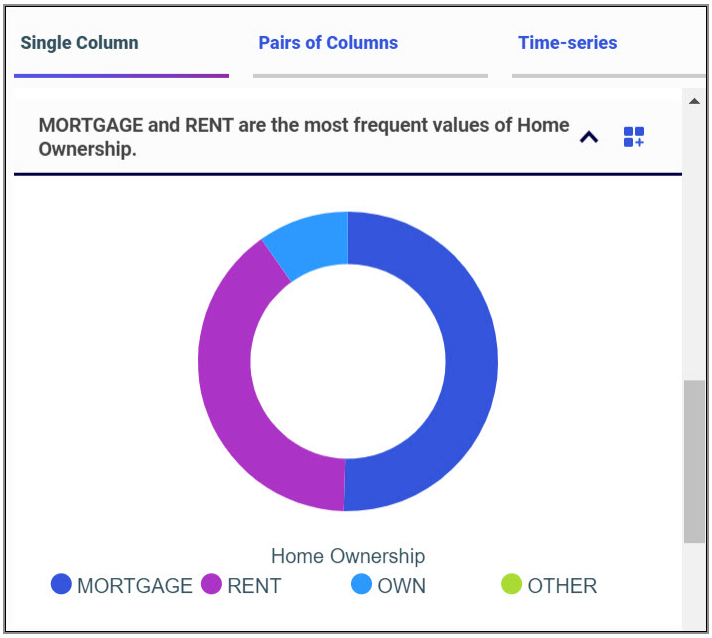
Distributions identify different types of frequency distributions. Dominances identify

where one category dominates over another. Correlations identify where multiple measures show a similar trend or pattern. Associations identify how categorical columns are correlated.

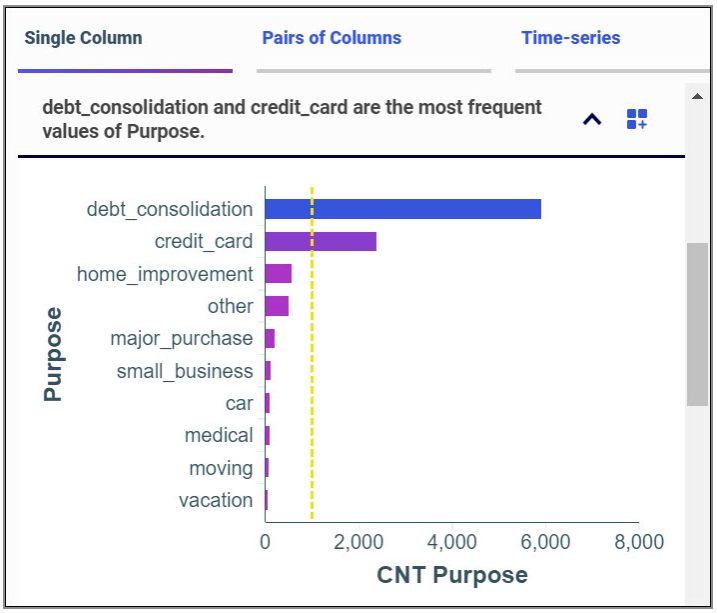
Dominances are determined based on count function and average function. Count function is when the count value of one or two categories is much larger than other classes for dimensions. Average function is when the average value of a measure against categories in dimensions is significantly higher than in other categories.

If the count distinct of a dimension is five or less, a pie chart is generated. If the count distinct of a dimension is more than five, a bar chart is generated.

A pie chart identifying most frequent values or dominances is shown in the following image.

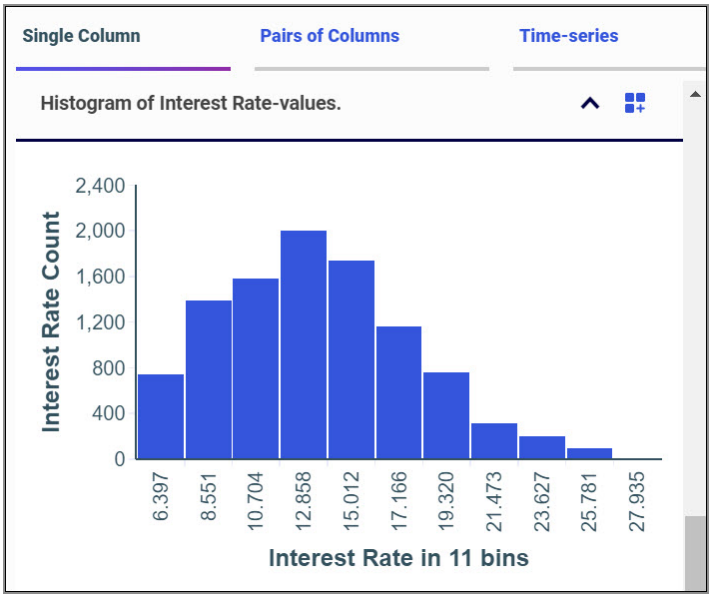


A bar chart identifying most frequent values or dominances is shown in the following image.



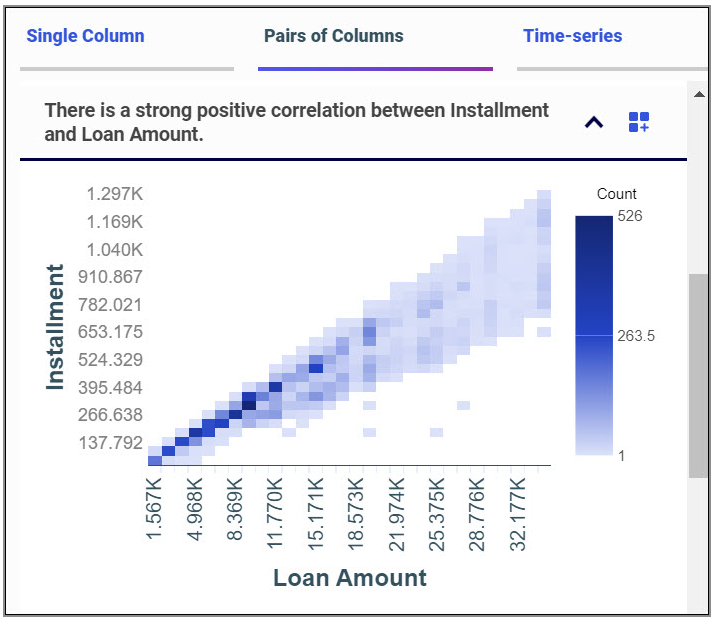
Bar charts include a yellow average line, so you can compare the dominant category with the average value.

A histogram identifying distributions is shown in the following image.



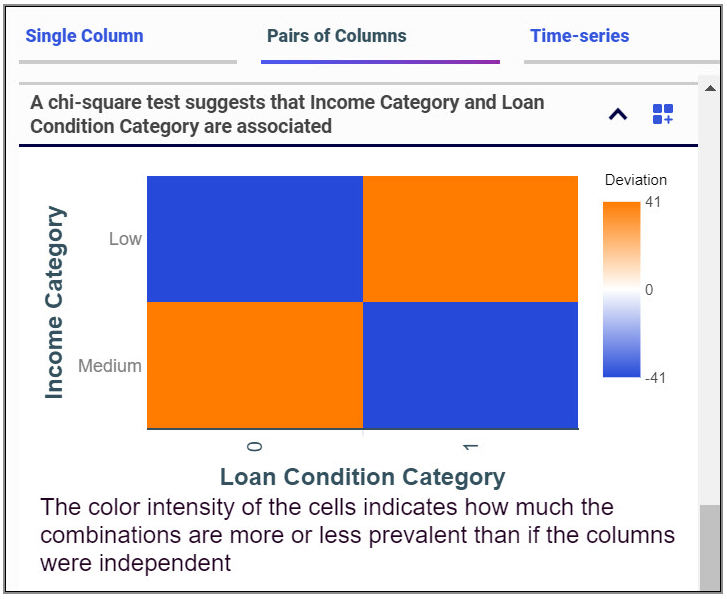
Histograms identify the underlying frequency distributions of a set of continuous data, such as right-skewed distribution, left-skewed distribution, normal distribution, and bimodal distribution.

A scatter plot identifying correlations is shown in the following image.



Scatter plots are generated for each pair of measures that have a high correlation score. Correlations identify where multiple measures show a similar trend or pattern.

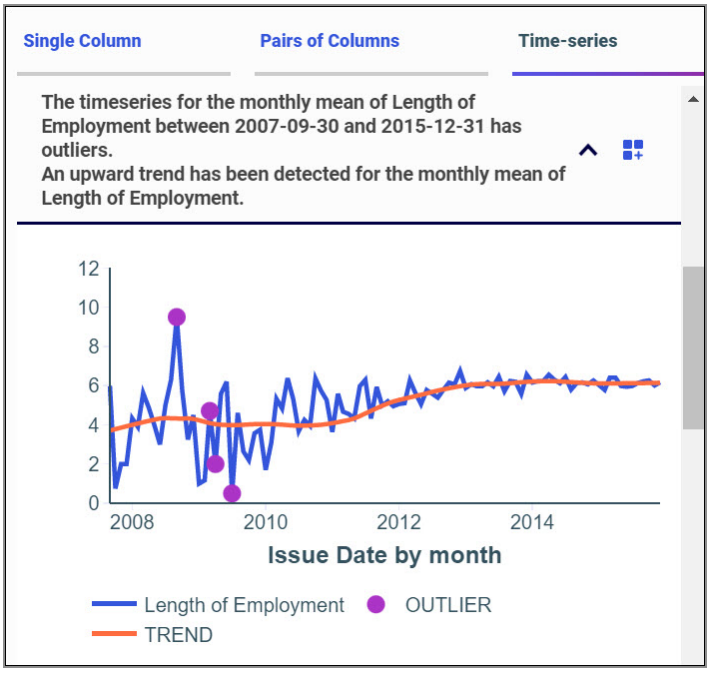
A chi-square chart identifying associations is shown in the following image.



The color intensity of the cells indicates how much the combinations are more or less

prevalent than if the variables were independent.

A line chart identifying trend and outliers is shown in the following image.



Line charts provide count and mean aggregated insights for all measures as a function of time. Purple points highlight cases where there are outliers in time dimensions.

Add Insights to a Page

You can add one or more charts to the page canvas.

Procedure

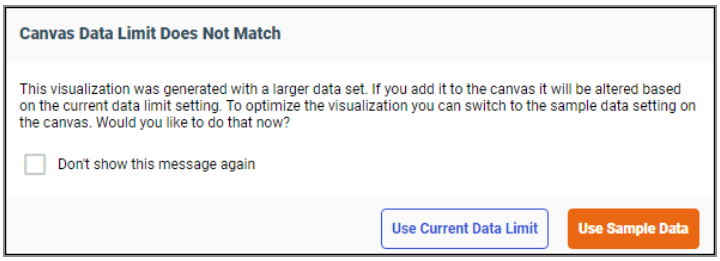
1. Click the **Action** icon in the generated chart container.

   A context menu opens, with options to copy content to the canvas, save the visualization to a workspace, or run the visualization in a new window.

2. Click **Copy content to canvas**.

   Your chart is added to the page canvas. Multiple charts can be added to a page.

Note: When you copy a chart to the page canvas, if the data limit on the canvas does not match the sample data set used when generating Insights, a data limit dialog opens, as shown in the following image.



You have the option to use the current data limit setting, or to update the canvas with the Insights sample data setting.

- **Use Current Data Limit**. Your chart is added to the page using the current canvas data limit setting.
- **Use Sample Data**. Your chart is added to the page using the sample data setting. Any other charts on the page are refreshed to reflect the sample data setting.

You can select the checkbox to stop showing the data limit messaging when adding charts.

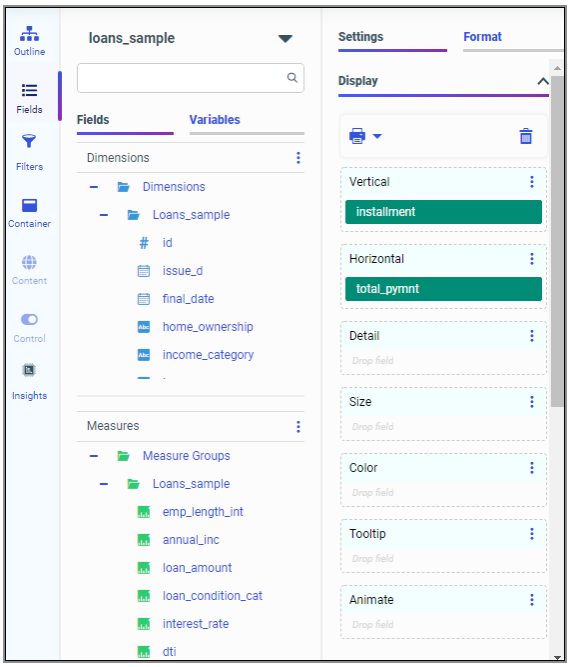
Edit Insights

You can edit the charts generated by Insights to customize the content you want.

Procedure

1. Select your chart on the page.
2. On the sidebar, click **Fields**.

   The Fields tab opens, as shown in the following image.



3. Drag fields into the Display panel buckets to modify your chart.
4. Right-click a field to select additional options.

> **Note:**
> For more information about creating and customizing charts in WebFOCUS Designer, see *Creating Charts*.

Save Insights

You can save a chart, or a chart page. Then you can share your insights with others.

Procedure

1. To save a chart, click the **Action** icon in the generated chart container.

   A context menu opens, with options to copy content to the canvas, save the visualization to a workspace, or run the visualization in a new window.

2. Click **save the visualization to a workspace**.

   The Save dialog opens, allowing you to name the chart and select a workspace

location.

3. Click **OK**.

   You can now share your chart with others.

4. To save a chart page, click **Save** from the WebFOCUS Designer toolbar menu.

   The Save dialog opens, allowing you to name the chart page and select a workspace location.

5. Click **OK**.

   You can now share your page with others.

> **Note:**
> To save as a standalone chart, select the **Outline** tab on the sidebar, right-click on the associated entry in the outline, and click the **Save as standalone** option.

Generating Insights in the ibi WebFOCUS Hub

You can easily run advanced analyses and generate visualizations and narratives on your data sets, without manually preparing and analyzing your data, or having prior knowledge of data science or statistics.

With one click, Insights can generate visualizations as charts with natural language headers. Then you can save your insights in a workspace and use them later within WebFOCUS Designer.

> **Note:** For installation information, see the *ibi™ WebFOCUS® Installation and Configuration* manual for your platform.

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Note: For installation information, see the *ibi™ WebFOCUS® Installation and Configuration* manual for your platform.

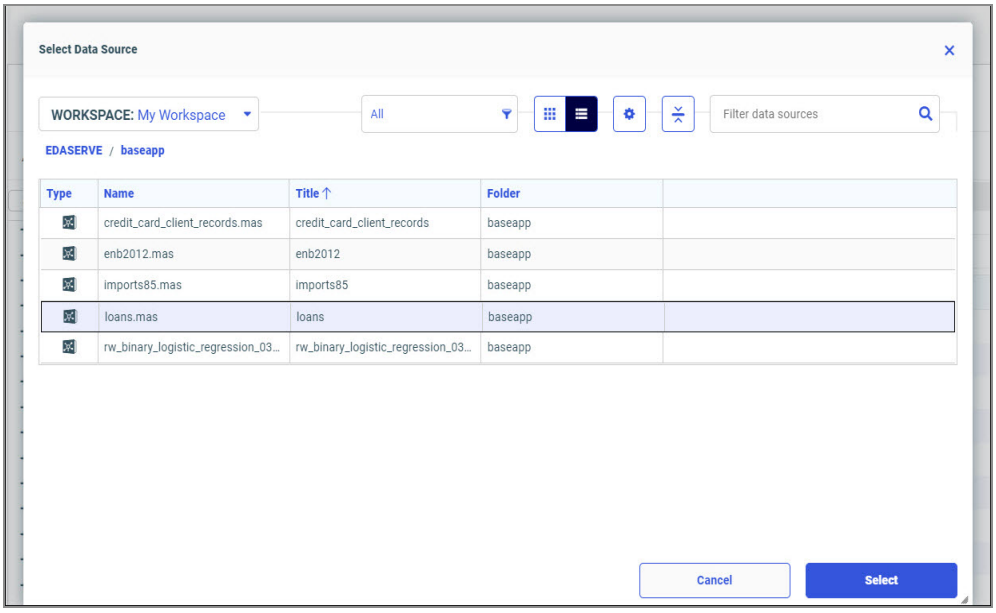
Generate Insights

You can generate visualizations that give you insights into your data.

Procedure

1. From the WebFOCUS Hub, click the plus menu, and then click **Explore Data**.

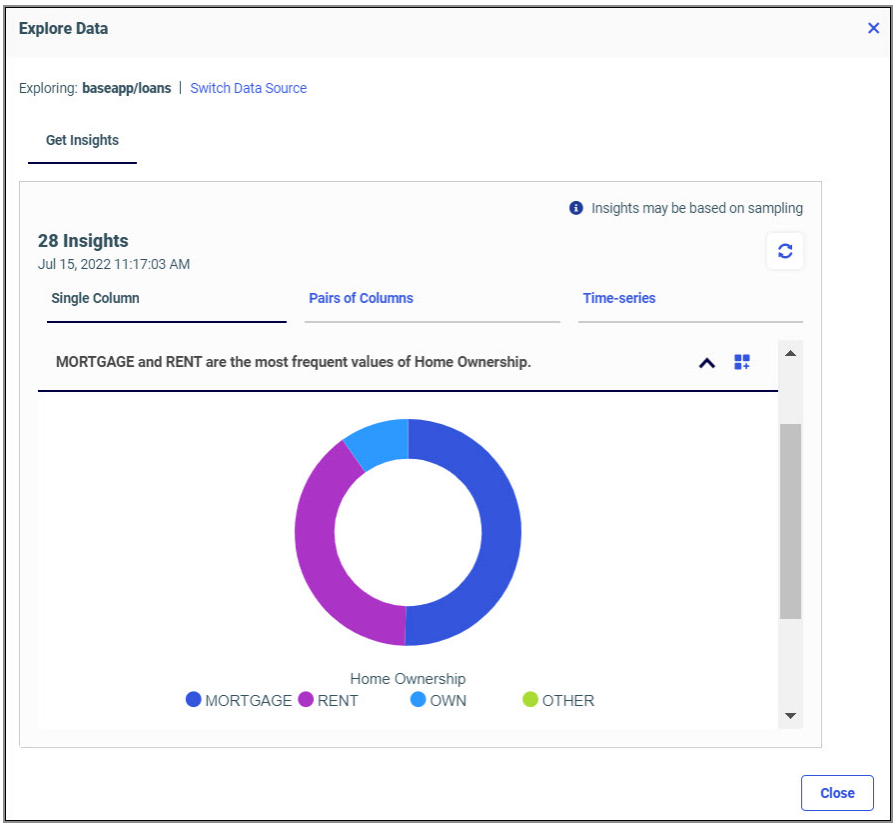
   The Select Data Source dialog opens, as shown in the following image.



2. Select a data source from which you want to generate insights.

   You can close the pop-up window while the insights are being generated. A toaster message is displayed once the insights are completed. Your insights are generated, as shown in the following image.

Note: Insights based on datasets with more than 100,000 records use representative sampling of 100,000 data points.



The total number of insights generated, with a time stamp, is displayed. If your data is dynamic, you can click the refresh icon to gain updated insights.

Your insights display as visualizations, or charts, in different accordions, which can be collapsed or expanded. Each insight includes an automated, header narrative that explains the trends in your data.

Click **Switch Data Source** to return to the Select Data Source dialog. Click the **Action** icon to run your chart in a new window, or save your chart to a workspace. Click **Close** to return to the WebFOCUS Hub.

Depending on your data set, your insights are generated and categorized into the following tabs:

- **Single Columns**. Displays results for single columns of data. Insights can show

dominance and distributions.

- **Pairs of Columns**. Displays results for pairs of columns of data. Insights can show correlations and associations.
- **Time-series**. Displays results for single columns of data that change over time. Insights can show seasonality, trend, and outliers.

For more information on types of generated insights and charts, see *Generating Insights in ibi WebFOCUS Designer*.

Save Insights

You can save your chart to a workspace.

Procedure

1. To save a chart, click the **Action** icon in the generated chart container.

   A context menu opens, with options to save the visualization to a workspace, or run the visualization in a new window.

2. Click **save the visualization to a workspace**.

   The Save dialog opens, allowing you to name the chart and select a workspace location.

3. Click **OK**.

   The chart is now saved to your selected workspace. From your workspace, you can right-click your chart to run it, share it, or edit it within WebFOCUS Designer.

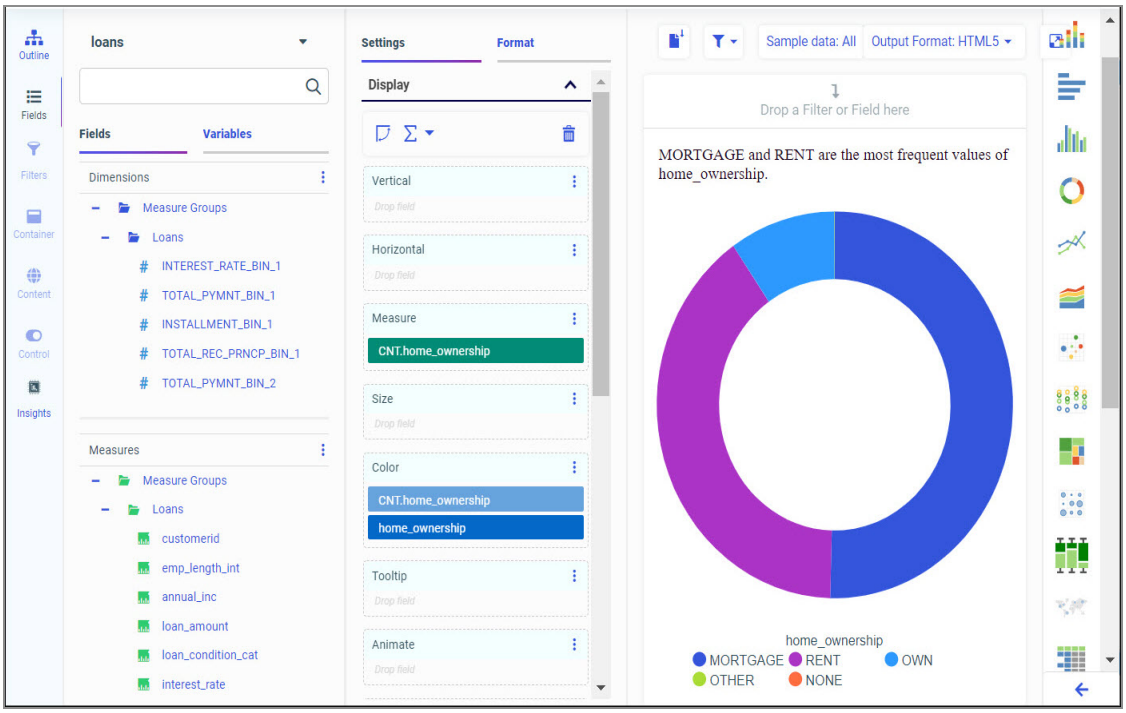
Edit Insights

After saving a chart to your workspace, you can open and edit it in WebFOCUS Designer.

Procedure

1. Right-click your saved chart and click **Edit**.

   Your chart opens in WebFOCUS Designer, as shown in the following image.



For more information on editing insights, see *Generating Insights in ibi WebFOCUS Designer*.

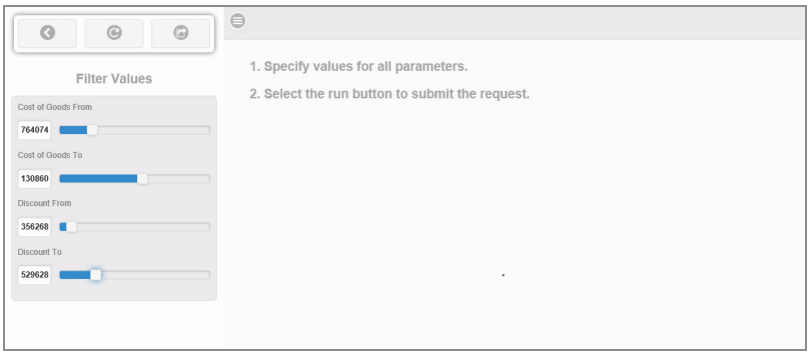
Previewing Content

As you create content and pages in WebFOCUS Designer, you can preview them to see how your data displays in the chart, or to check the styling, run-time behavior, and filtering before publishing or sharing it with others. At any point in the development of your visualization, click **Run in new window** .

Clicking **Run in new window** runs the visualization in a new browser tab, allowing you to view your content at run-time while continuing to edit it in a separate window. If you click **Run in new window** again, the content is reloaded in the same new tab.

Once it is saved, you can also run your content from the WebFOCUS Hub or WebFOCUS Home Page by right-clicking it and clicking **Run**.

When you preview stand-alone charts and reports that contain required filter prompts, you are presented with an Autoprompt page. You can use the filter controls to set values for each filter, as shown in the following image.


Filter Values
Cost of Goods From
764074
Cost of Goods To
130860
Discount From
356268
Discount To
529628
1. Specify values for all parameters.
2. Select the run button to submit the request.

Organizing Content Into Pages

Pages use containers to display multiple content items, and provide run-time options such as the ability to expand and collapse containers, navigate between items in a multi-content container, apply and clear filter selections, and even use custom functionality added using JavaScript. You can customize and style the entire page as well as sections, containers, and filter controls on the page using an intuitive set of options as well as CSS themes and custom CSS enhancements.

You can create a page in two ways. On the WebFOCUS Hub or the WebFOCUS Home Page, click the plus button and then click **Assemble Visualizations** to create pages using existing content from your environment. Alternatively, click the plus button and click **Create Visualizations** on the Hub, or click **Visualize Data** on the Home Page to create new content. When you create new content and click **Convert to page**, the visualization transforms from a single chart or report into a page.

You can run and share a page on its own, or add it to a portal to provide more context in combination with other pages.

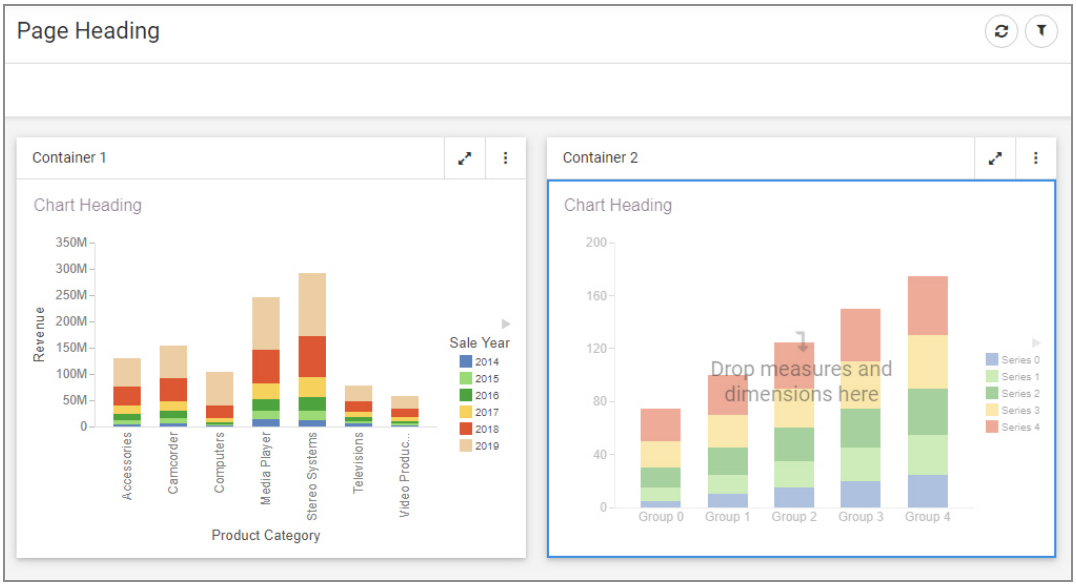
Creating Pages

You can create a page in two ways. Create a visualization with new content using the **Create Visualizations** option on the plus menu of the WebFOCUS Hub or the **Visualize Data** option on the WebFOCUS Home Page, and then transform the chart or report into a page by clicking **Convert to page**. You can then create new charts and reports directly within the page. Alternatively, you can create a page from existing content by clicking **Assemble Visualizations** on the plus menu of the WebFOCUS Hub or WebFOCUS Home Page to open WebFOCUS Designer in assemble mode. Once you select a page template, you can start adding content from your repository to the page. This content can include images, embedded URLs, and other existing content that is unavailable when you convert a single chart or report to a page.

Pages can include multiple sections, each with multiple containers for your content. Each of these containers can also be configured to contain multiple content items, providing a thoroughly comprehensive overview of your data. Pages also include run-time filtering,

content navigation, and content customization, allowing users to analyze, explore, and enhance the information provided on each page.

To add a second item to a visualization, such as a chart or report, click **Convert to page** on the Visualization toolbar. This transforms the single content item into a page. The first content item is moved into a container. Click **Add container**, drag a container from the Container tab on the sidebar, or drag a field or existing content item into an empty area of the page to add a second container. A visualization to which a second content item has just been added is shown in the following image.



Select an item on the page from the canvas or the outline to edit it using a relevant set of tools and options, whether the item is a content item or a page component. The Settings and Format tabs on the Properties panel update accordingly. When assembling a page from existing content, you can also select multiple components, sections, or filters while holding down the Ctrl key in order to edit or style multiple items of the same type at once. Additionally, some options are applied hierarchically. For example, setting a theme for the page applies that theme to any sections, containers, and content items that use the default style option.

You can add more new content to the page by clicking **Add container**, or by clicking the **Container** tab on the sidebar and dragging a container onto an empty area of the page from the Resources panel. You can then select the content are of the new container and create a new chart or report within it. You can also drag a field onto an empty area of the page to create a new container and content item in the location where you dropped the field.

If you are creating a page from existing content, you start by selecting a page template. Select the Blank template to add content and containers to the page yourself, or select a

preset layout with containers to which you can add your content. The InfoApp 1 template provides a collapsible filter panel and movable filter grid to which you can add filter controls, which are generated when you add parameterized content to the page. The Workbench template provides a resource tree that you can use to navigate to content items in your repository, which you can then run in the target container on the right. You can also create your own templates and save them in the Global Resources area of your repository.

Once you have selected a page template, you can add existing content from your repository to the page by clicking **Content** on the sidebar, and then navigating to and dragging an item onto the page or into a container. These items can be external charts, reports, HTML pages, URLs, images, and more. You can navigate between folders in the Resources panel and locate an item by name using the search bar.

You can also duplicate an item by right-clicking the container or subsection that contains it and clicking **Duplicate**. This makes it easy to develop content by maintaining the styling, fields, and other properties from the existing content item and container. The title of the duplicated item is reused, with the text **(Copy)** added to the end. If you duplicate the content in a single-item panel container, a new container with the same content is added to the page. When you right-click a multi-content container, you can click **Duplicate Container** to duplicate the entire container, including all content, or click **Duplicate Content** to duplicate only the visible tab, accordion panel, or carousel slide.

You can move and resize containers on the page to organize them, or select a preset layout from the Container tab of the Resources panel to automatically create and arrange containers into a preset pattern.

You can save space on the page by placing multiple content items together in a tab, carousel, or accordion container.

If you are creating a page from existing content, to change a standard panel container into a tab, accordion, or carousel container, select **Content** on the sidebar and then drag a content item onto the container, already populated with content, on the canvas. The entire container is highlighted, indicating that the item is dropped into the container. When you release the item into the container, you are prompted to replace the existing content, add the item in a new tab, accordion panel, or carousel slide, or cancel the operation.

Alternatively, to instantly convert a container to another type, you can right-click it on the canvas and point to **Convert to**, then select a container type of your choice. If you convert a container with multiple items into a panel container, which only supports one content item, each content item from the original container is added to a separate panel container. For example, if you convert a tab container with three tabs into a panel container, three panel containers are created.

You can combine multiple, existing containers on a page into a single multi-content container. Hold the Ctrl key and click the toolbars of multiple containers to select them, then right-click a container, point to **Combine**, and select a container type to combine them into. You can combine containers into a tab, accordion, carousel, or panel group container. The Combine option is unavailable when combining existing link tile, grid, and panel group containers, and for the Explorer widget, since these are special containers that do not contain standard content.

You can also combine containers by holding the Ctrl key and dragging one container onto another. When you drop the container, the Combine containers dialog opens, allowing you to select the type of container into which to combine the contents of the containers involved, or to cancel the operation. If you combine the selected containers, the new container occupies half of the page width and is placed within the available empty space on the page. Once the containers have been combined, you can hold the Ctrl key and drag other containers on the page into the grouped multi-content container or panel group.

To delete a container from a page, right-click it and click **Delete container**. If the container includes multiple items, you can click **Delete Tab**, **Delete slide**, or **Delete Area** to delete a single sub-component, depending on the container type. You can also delete the selected container or sub-component by pressing the Delete key.

When creating new content in a page, you can filter the entire page by dragging a field from the Resource panel into the Filter toolbar, just like when you create a content item. You can select default values for the filter from the resulting filter control, and right-click it to change other filter properties. If you are creating a page with existing content, then when parameterized items are added to a page, a badge appears on the Filters tab of the sidebar, alerting you that you can create filter controls. Open the Filters tab and click **Add all filters to page** to create filter controls for all parameters, or right-click an individual parameter in the list and click **Add to page** to create a filter control for a single parameter. These controls apply filters to any items that are parameterized for the same amper variable and field.

As you create your page, you can click **Run in new window** to see a run-time view of your page, allowing you to interact with filtering, built-in container controls, In-Document Analytics, and any unlocked or interactive content on the page. You can check these variables by clicking **Info** on the Visualization toolbar.

Be sure to periodically save your page by clicking **Save** on the WebFOCUS Designer toolbar.

Applying Themes and Styles to Pages Styling Pages

A number of tools in WebFOCUS Designer support your efforts to apply styling to pages and page components. You can resize content, hide content from smaller devices if it interferes with a responsive layout, edit page, section and container properties, apply filters, themes and styles, and create custom templates.

Working With Content Containers

When you add content to a page, it is automatically placed in a container. To move and resize the content item, move and resize the container into which it was placed by dragging the container or its resizing handles. You can also configure and style a container by selecting it on the page and then using the options on the Settings and Format tabs of the Properties panel. Note that the options for a container are separate from those for the content item inside the container. To select the container, click the container toolbar, or select a container from the Outline tab of the sidebar. Empty containers can be added to the page by selecting the **Container** tab on the sidebar and dragging the selected container type into the canvas. A highlighted area shows where the container is placed.

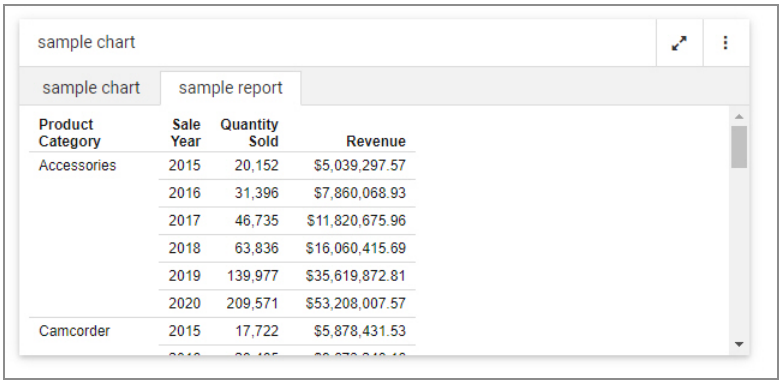
There are several types of containers. The default container for a single item is a panel container. The panel container is a basic container type that includes a title bar and toolbar with a run-time menu, as shown in the following image.

The run-time menu provides the ability to refresh the content in the container by default.

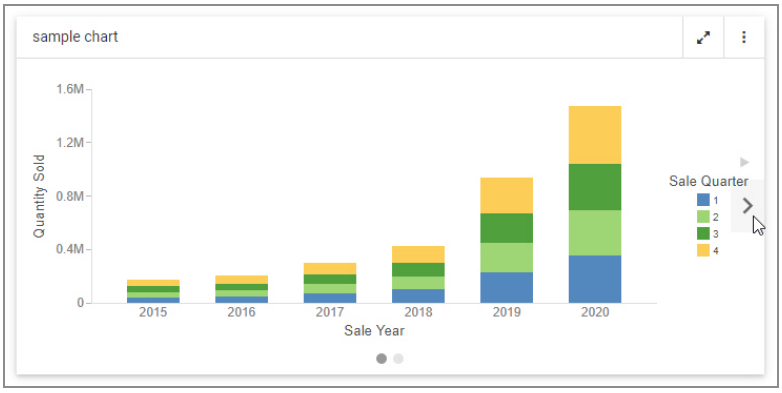
You can also add custom options to the run-time menu and to the container toolbar using embedded JavaScript. For more information, see Enhancing Pages With Custom JavaScript.

To add multiple items, such as charts, reports, and images, to a single container, use the tab, carousel, or accordion container types. These container types include the same features as the panel container, as well as controls to navigate between multiple content items. You can add another content item to a container by selecting the **Content** tab on the sidebar, navigating to an item, and dragging it onto the existing container. You are given options to add the new item to a new tab, panel, or slide, or replace the visible, existing item in the container.

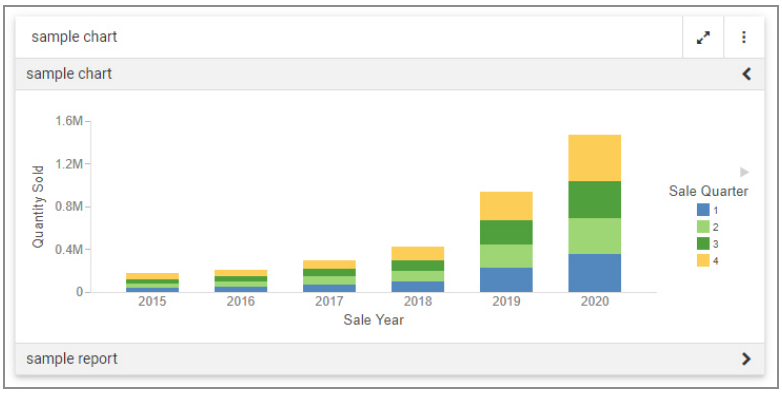
In a tab container, navigate between items using the tabs below the title bar. You can double-click the text in a tab to change it, and right-click a tab to delete, duplicate, or reorder it. A tab container is shown in the following image.



A carousel container allows you to switch between content items by clicking a dot at the bottom of the container, or by clicking arrows that appear when you point to the left or right side of the container. When creating a page, right-click a carousel container to duplicate, reorder, or delete a slide. You can set a carousel container to automatically cycle between content items using the options described in Automatically Advancing Slides in a Carousel Container. A carousel container, with navigation arrows, is shown in the following image.



Accordion containers place content in collapsible panels. You can expand and collapse items in an accordion container by clicking a panel label. When creating a page, right-click an individual panel in an accordion container to rename, reorder, duplicate, or delete the panel. An accordion container is shown in the following image.



Other types of containers serve more specific purposes. The grid container type, only available in pages assembled from existing content, can be used as a filter container, as an alternative or in addition to the filter toolbar. Once you add filter controls from your content to a page, you can drag them from the default location in the filter toolbar into the grid control. Select the filter bar within the panel from the outline, and then select the **Format** tab to change the number of columns in the grid container. You can also drag a text label or submit button to the grid from the Control tab on the sidebar.

You can use a panel group container to keep a set of vertically arranged panels together when responsive folding occurs as the size of the page changes. To use a panel grid container, add it to the page, then drag new containers, content items, or fields into it. For more information, see Adding Panels to a Responsive Container.

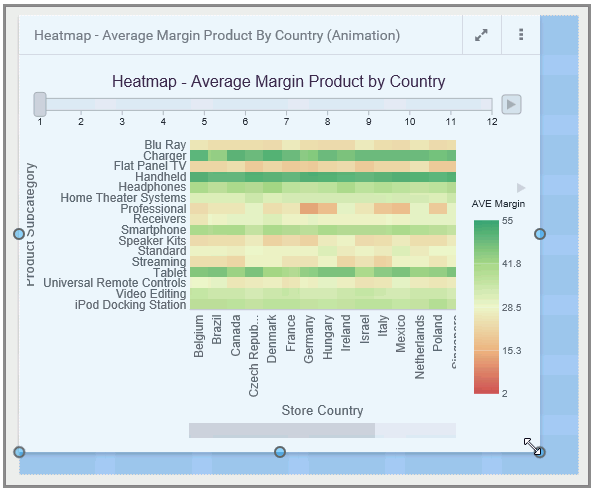
A link tile container allows you to display a content item or image on a page that can be clicked to access additional, outside content. Drag the link tile container onto the page, then from the **Settings** tab, use the link tile Background, Content, Attach all parameters, and Target properties, to set the displayed and target content, and configure how the link tile behaves. For more information, see Linking to External Content From a Page.

You can use the Explorer widget to provide access to the Workspaces view of the WebFOCUS Hub or WebFOCUS Home Page. This allows anyone accessing the page, or a portal containing the page, to open and run content items and create new content, depending on their privileges. In the Explorer widget, you can navigate through workspaces, folders, and content items from the Resources tree and Content area, and create new content using options in the +Content menu. For more information, see Providing Access to Content Items and ibi WebFOCUS Tools.

Right-click any type of container to access a shortcut menu of options. These include the ability to refresh the container content, change the title of the container, access the Settings or Format tabs, duplicate the visible content item, change the container type, or delete the container. If you select multiple containers, you also have the option to combine them into a tab, accordion, or carousel container.

Resizing Content on a Page

You can resize content on a page, at any time, using the sizing handles and the shaded placement area that appear on the canvas. When you hover over a container on the canvas, a series of handles appear. Drag a handle in the direction that you want to resize the item, as shown in the following image.



The content container snaps to the nearest row and column when you resize it. To change the number of columns in a section on the page, allowing more granular container widths, select a section, open the **Format** tab, and select an option from the Number of Columns area. 12 is the default. You can also change the amount of space between containers by selecting the entire page and typing a size for the Margin property, on the Format tab.

Editing Page, Section, and Container Properties

The Properties panel displays the properties for the element that is selected. To access container properties, select a container from the canvas or outline. To access section properties, click the grid inside the canvas, or select a section from the outline. To access page properties, click the page header or the toolbar, or select a page from the outline. If the page header and the toolbar are hidden, you can also access page properties by clicking the canvas outside a grid section.

The following properties are available when you select an entire page.

Settings tab:

- **ID.** Contains a read-only unique CSS identifier.

- **Classes.** Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code.
- **Show page heading.** Toggles between hiding and showing the title in the header.
- **Enable initial auto-load.** Toggles between whether or not data should automatically be loaded into all content containers when a visualization first opens.
- **Show page toolbar.** Toggles between hiding and showing the page toolbar.
    - **Show page refresh.** Toggles between showing and hiding the refresh button on the page toolbar.
    - **Show export.** Toggles between showing and hiding the Export menu on the page toolbar. You can export a page as a PDF or as a .png image. Select just the **PDF** or just the **Image** checkbox to make just one of these export options available from the page, in which case the Export menu turns into an Export button.
- **Include Page Filters.** Select this checkbox to add a filter toolbar to the page, even if no filters have been added yet. Clear this checkbox to remove the filter toolbar.

  If **Include Page Filters** is selected, you can select one of the following options to change the position of the filter toolbar:

    - **Below Header.** The filter toolbar is placed below the page toolbar and header. This is the default.
    - **Above Header.** The filter toolbar is placed above the page toolbar and header.
    - **Left Position.** The filter toolbar is aligned vertically along the left side of the page, below the page header.
    - **Modal.** The filter toolbar is accessible in a modal window overlaid onto the page. Click the **Show filters** button on the page toolbar to open the modal window and make filter selections.

Format tab:

- **Theme.** Allows you to select a theme for the page. The default options are Designer 2018, Light, Midnight, and Vivid. Administrators can configure additional themes that are available to users from this property. For more information, see Applying Themes and Styles to Pages.
- **Margin.** Controls the size of the margin between the border of the page and the content.

> **Note:** If the margin property is set to 0, you cannot select a section on the page from the canvas or access the section shortcut menu options. As a workaround, change the margin property value to 20px temporarily to gain access to the section and its options.

- **Maximum width.** Controls the maximum width of the page.
- **Page Heading Style.** Provides a selection of typeface styles for the page heading. Additional header text formatting can be done using CSS. For example, you can assign a class to the page and use the font-family property to change the header text font.

The following properties are available for sections.

Settings tab:

- **ID.** Contains a read-only unique CSS identifier.
- **Classes.** Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code.
- **Collapsible.** Toggles between collapsible and noncollapsible modes of the selected section.

Format tab:

- **Style.** Allows you to choose a style for the selected section, or select **Default** to use the theme selected for the page.
- **Row height.** Sets the height of the section that is currently selected on the canvas. The default value is 60px.

> **Note:** Changing the row height does not change the margin, which can be configured on the page level.

- **Number of Columns.** Allows you to change the number of columns in a section, enabling more granular panel widths. Panels snap to the nearest column and row when you resize them. 12 columns are used by default, and 28, 45, and 80 column options are also available.

The following properties are available for containers.

Settings tab:

- **Container Settings.** Provides access to the following properties.
  - **ID.** Contains a read-only unique CSS identifier.
  - **Classes.** Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code.
  - **Show title.** Toggles between hiding and showing the title.
  - **Show toolbar.** Toggles between hiding and showing the container toolbar.
  - **Show On.** Allows you to hide the selected container or item from displaying on specified devices. The options include desktop, tablet, and mobile.
  - **Autoplay interval.** Available for carousel containers. Allows carousel slides to automatically cycle based on the selected interval, in seconds. When set to 0, autoplay is disabled.
  - **Rerun content.** Available for carousel containers. When the Autoplay interval is set to a value higher than 0, the Rerun content option allows you to refresh the content on each slide of a carousel container when it appears. If Rerun content is not enabled, then the content on each slide only loads the first time it appears.
- **Container Customization.** Provides options that allow users to change the content in a page at run time. Includes the following properties.
  - **Lock container.** If disabled, allows users to change content in the panel at run time. This property is enabled by default.
  - **Select content from.** Allows you to set the initial directory that users see when they click the **Add content** button.

    > **Note:** To see the full value displayed in the field, widen the Properties panel area by clicking the separator and dragging it to the right.

  - **Lock path.** When enabled, limits the content selection area to the directory that is specified in the Path property. This property is enabled by default.
  - **Flatten list.** If enabled, hides the folder hierarchy and the breadcrumb trail within the directory that is specified in the Path property. This property is disabled by default.

> **Note:** This property is especially useful if you want to display different widgets to different users based on their roles. For example, you can create a series of subfolders with content and then apply security rules to show and hide these subfolders from users based on their group membership. Then you can configure the **Path** property to display the parent of these subfolders and flatten the list. Now each user can only see the widgets they are authorized to see in a simple list without any folders to navigate.

- **Hide tags.** If enabled, hides tag buttons in a flattened list. This property is disabled by default. It remains inactive when the **Flatten list** property is disabled.
- **Initial view.** Determines the initial view of the directory that users see when they click the **Add Content** button. The options are Grid and List.

  > **Note:** Users can change the view at run time inside the Select Item dialog.

Format tab:

- **Style.** Allows you to choose a style for the selected container or item.

The following options are available for content items in a page assembled from existing content. New content items in a page provide standard content creation options, in addition to these.

Settings tab:

- **Content Properties.** Provides access to the following properties.
  - **ID.** Contains a read-only unique CSS identifier of the content item. You can reference this ID in custom JavaScript and CSS code as well as drill-down targeting procedures.
  - **Classes.** Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code as well as drill-down targeting procedures.

Format tab:

- **Content Format.** Provides access to the following property.

- **Theme.** Select a theme to apply to the content item. You can explicitly select a theme, or have the item inherit the theme used in the page. When the item is part of a page assembled from existing content, you can also select **Use content theme** to use the theme originally applied to the item, ensuring that it does not get overwritten by the page or portal theme. For more information, see Applying Themes and Styles to Pages.

Hiding Content From Devices

You can choose to hide certain content items from smaller devices, especially when dealing with large or multi-faceted items like maps or HTML pages. When an item is hidden from a device, the other items around it re-flow into the empty space and retain the responsive layout.

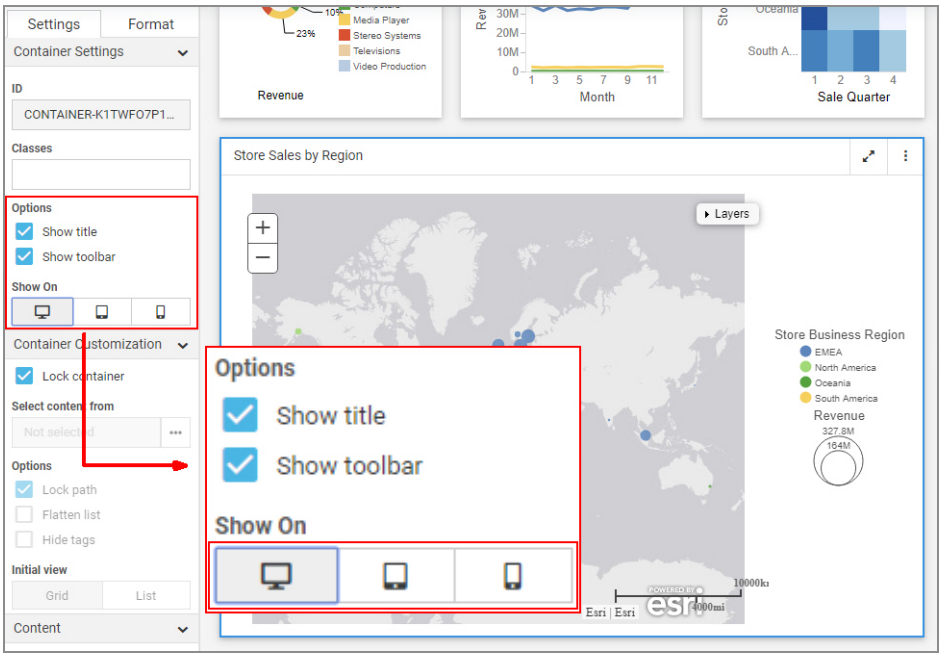
Hide a Content Item From Devices

Procedure

1. In WebFOCUS Designer, select a large item that you want to hide from small-screen devices.
2. On the Properties panel, on the Settings tab, under the Show On property, click a device icon to hide the selected item from this type of device.

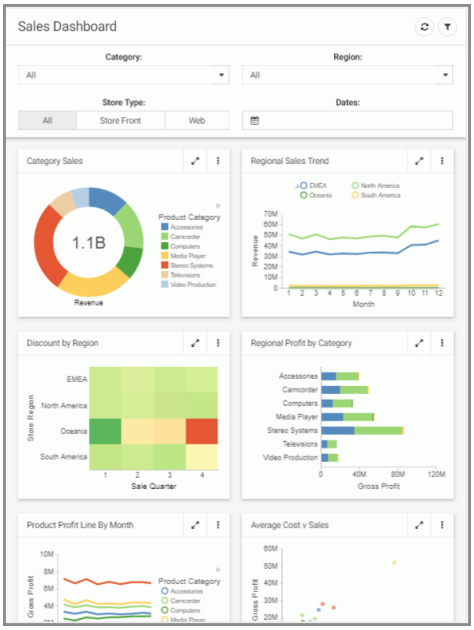
   Note: All three device buttons are selected, by default, making the item visible on all devices. Manually clear the buttons to hide the item from specific device types.

   An example of hiding a large item from mobile phones and tablets is shown in the following image.



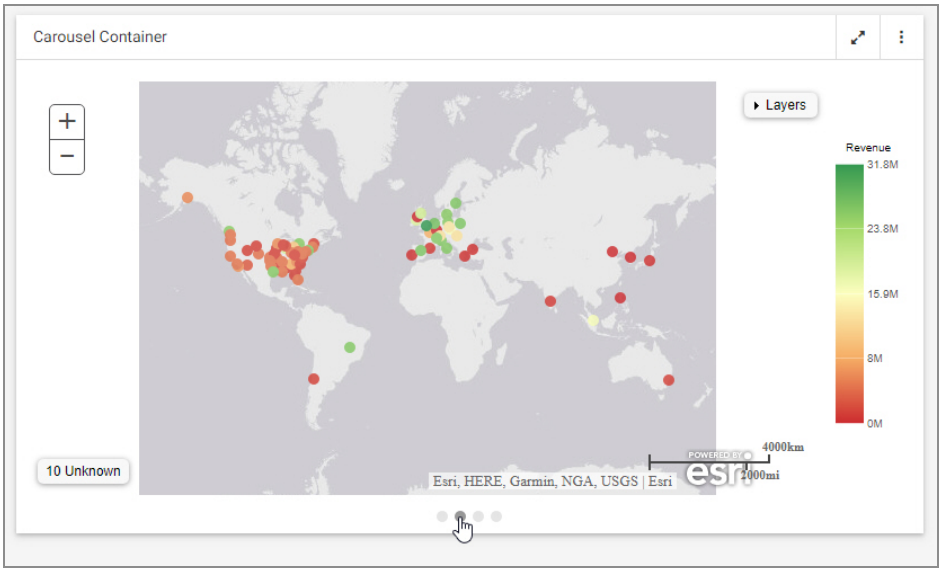
3. Save the page.
4. Run the page on a device, from which the item was hidden.

   The item does not display. All remaining content items rearrange to cover the empty space, as shown in the following image.



Automatically Advancing Slides in a Carousel Container

Using a carousel container is one way to put multiple charts, reports, and other content items into a single container. Carousel containers include an unobtrusive control that allows users to cycle through the items added to it, as shown in the following image.



Unlike tabbed or accordion containers, carousel containers also include the option to autoplay the content within them, allowing you to show all of the content in the carousel container without requiring user interaction.

To enable autoplay for a carousel container, select the container and open the Settings tab on the Properties panel. The Autoplay interval and Rerun content properties are available in the Container Settings section. To enable autoplay, set the Autoplay interval to a value higher than zero (0) to enable autoplay. The Autoplay interval is the amount of time, in seconds, that each slide is shown before advancing to the next slide.

When the Autoplay interval is set, the Rerun content option becomes available. This option is turned off, by default. When enabled, the content on a slide of the carousel container refreshes each time it is displayed. When Rerun content is not enabled, the content on each slide only loads the first time it is displayed, and it is not refreshed unless manually prompted from the menu on the container toolbar.

Applying Themes and Styles to Pages

While customizing your page, you can apply themes and styles to various page elements. The general theme of the page is defined by the Theme setting, which you can configure in the Properties panel, on the page level. A theme affects the look of the entire set of elements on the page, including colors, opacity, and typeface styles. Themes also dictate the color schemes available as styles on the Format tab when editing sections, filters, or containers.

By default, the theme selected for a page is passed on to content in the page. You can select content items inside a container and change the theme for each one individually from the Format tab. If the content item was added to the page from the Content tab, you can additionally choose to use the original theme of the content item, instead of inheriting the page theme or selecting a specific theme to use.

There are four themes that WebFOCUS Designer offers:

- Designer 2018
- Light
- Midnight
- Vivid

To add a theme to this list, create a folder in the Global Resources area, in the Custom folder within the Themes folder. In that folder, you can add a custom StyleSheet to use with charts and reports, and a custom CSS file to use for pages. The .sty file and .css file must both be named **themes**.

Note: To facilitate the creation of a custom theme, you can copy and modify properties from one of the themes included with WebFOCUS. This makes it easy to identify the default classes used in a WebFOCUS Designer page.

Once you select a theme, you can further modify it by configuring styles. You can also save your unique combination of a theme and styles as a custom theme.

Apply a Theme to a Page

Procedure

1. In WebFOCUS Designer, click the page toolbar to select the entire page, and then click the **Format** tab on the Properties panel.

   The style properties appear.

2. In the Page Style section, from the Theme property dropdown list, select the theme that you want to use.

   The page refreshes with the new theme.

3. Save your changes.

Apply Styles to Sections

Procedure

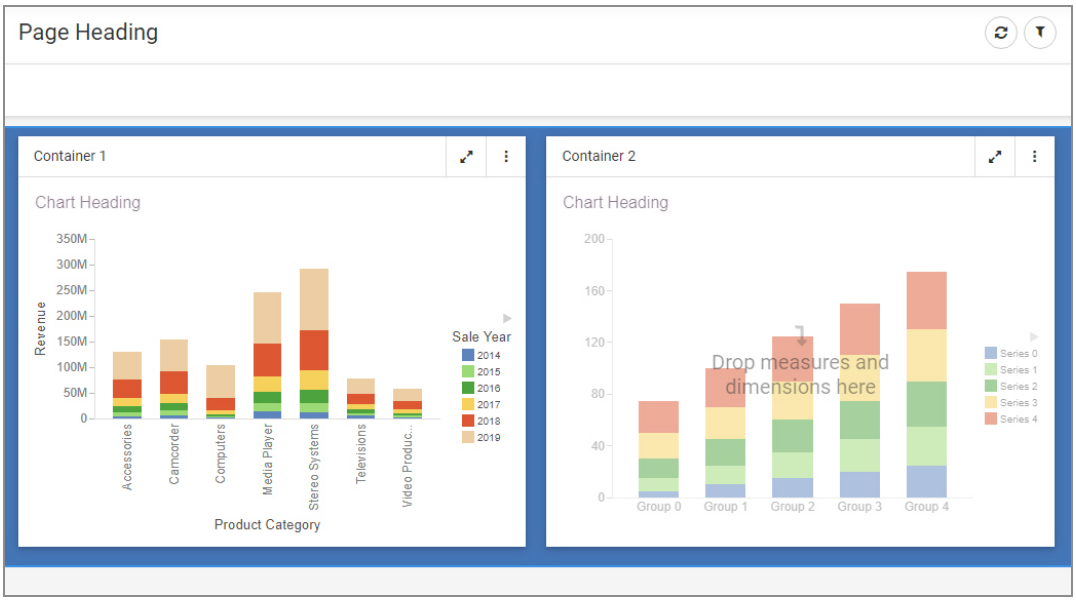
1. In WebFOCUS Designer, select a page section by clicking the background area near a container, or by selecting a section from the outline.
2. On the Properties panel, click the **Format** tab.

   The Style properties appear.

3. Click a style that you want to use.

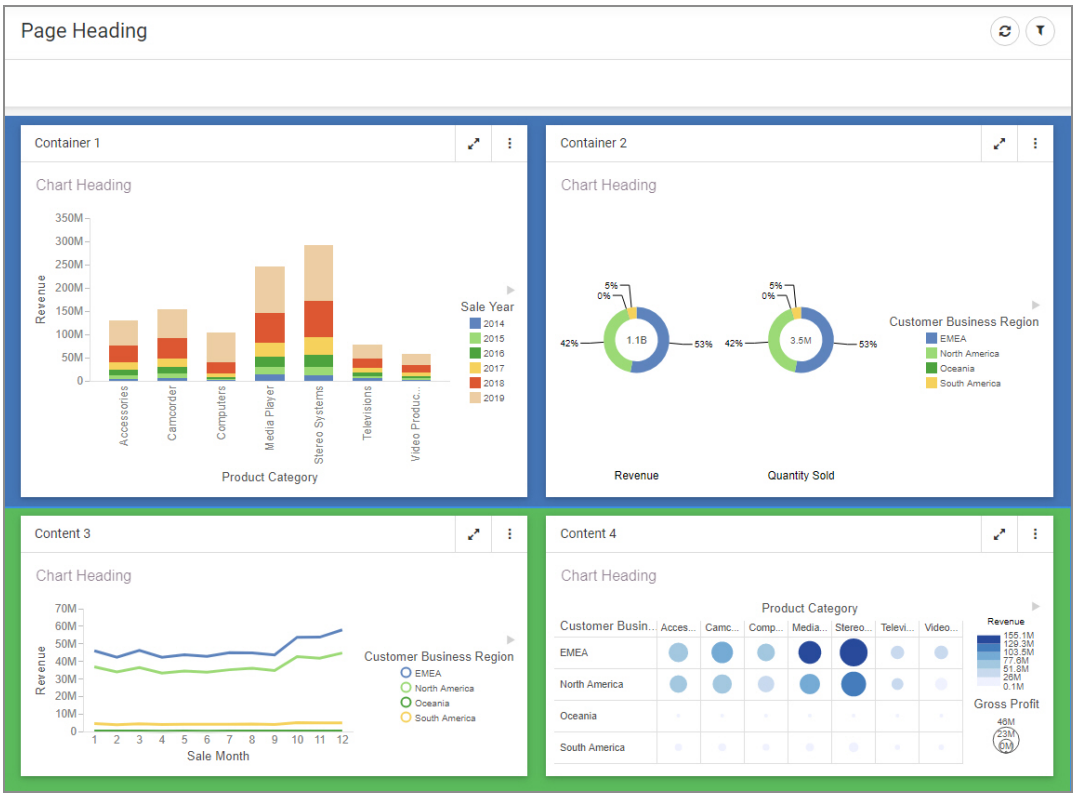
   > **Note:** Styles are based on classes in the selected theme. For example, use the class .pd-style-default-color to configure the Default style of the theme, use the class .pd-style-color2 to configure Style 2 of the theme, and use the class .pd-style-color3 to configure Style 3 of the theme.

   The page refreshes and applies the style to the section, as shown in the following image, where the selection of Style 2 has made the first section blue.



4. Optionally, add more sections and apply styles to them.
5. Click the new section and apply a style to it, as described in step 3.

   The page refreshes and applies the new style. You can apply different styles to different sections, as shown in the following image.



6. Save your changes.

Apply Styles to Containers

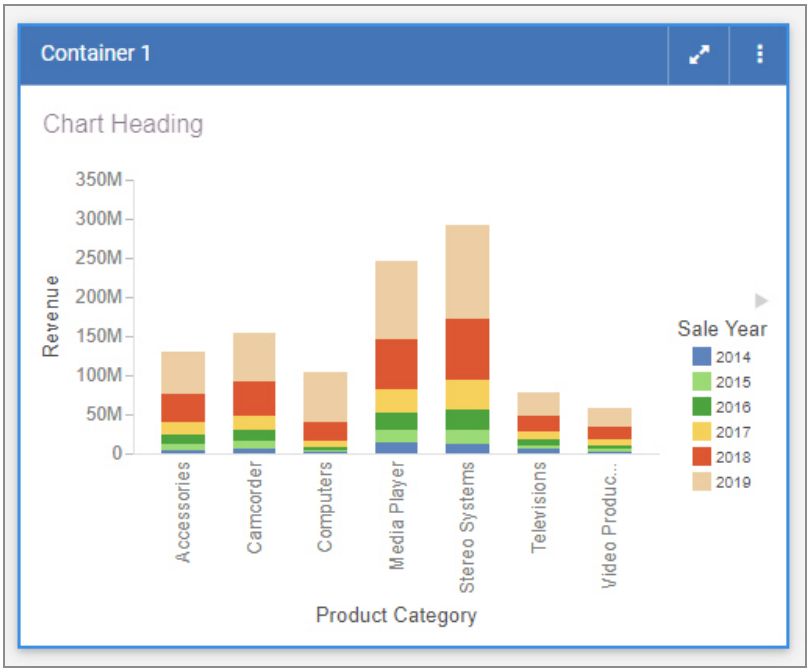
Procedure

1. In WebFOCUS Designer, create a visualization with multiple containers.
2. Click a container, and, on the Properties panel, click the **Format** tab.

   The Style properties appear.
3. Click a style that you want to use.

> **Note:** Styles are based on classes in the selected theme. For example, use the class .pd-style-default-color to configure the Default style of the theme, use the class .pd-style-color2 to configure Style 2 of the theme, and use the class .pd-style-color3 to configure Style 3 of the theme.

The page refreshes and applies the style to the container, as shown in the following image.



4. Optionally apply styles to other containers on the canvas.

> **Note:** When creating a visualization from existing content, to apply the same style to multiple containers, multi-select containers by holding the Ctrl key, and then click a style button.

5. Save your changes.

Create a Custom Theme

Procedure

1. Sign in to WebFOCUS as an administrator.
2. On the Hub or Home Page, click **Workspaces** and, from the Resources tree, expand the **Global Resources** folder, and then expand the **Themes** folder.
3. Open the **Custom** folder, and then click the **New folder** bottom above the Resources tree.

The New Folder dialog opens.

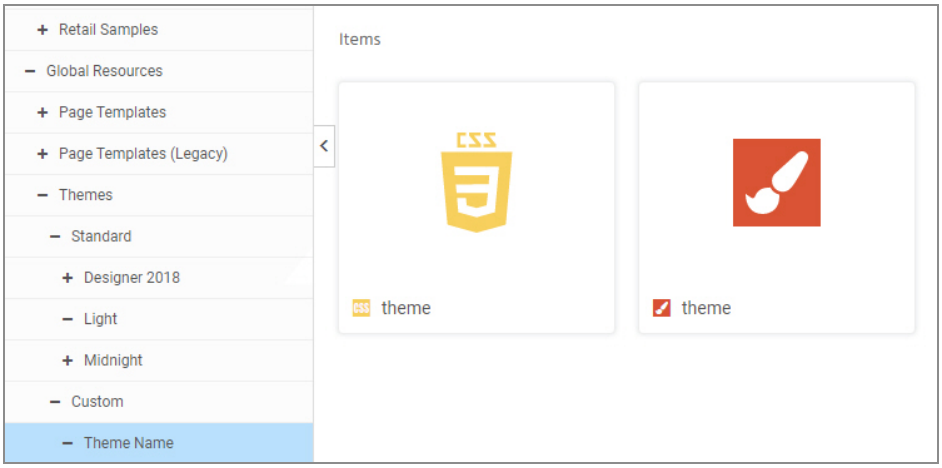
4. Populate the Title field with the name of your custom theme, and click **OK**.

   The custom theme folder is created. Your theme CSS file resides in this folder. If you know which CSS classes should be used for your theme, you can create a new CSS text file, add your code, and save it with the name **theme**. The file must be called **theme** to be available for selection in WebFOCUS Designer. To facilitate the process, you can modify an existing theme CSS file. In this example, we copy and modify the theme CSS file for the Light theme.

5. Expand the **Standard** folder, and then expand the **Light** folder.

6. Copy the theme CSS file, and paste it inside your new custom theme folder.

   The following image shows the correct hierarchy of the custom theme file.



> **Note:** Do not modify the name of the theme CSS file. It is imperative that both the CSS file and StyleSheet in your custom theme folder are called theme. The name of the folder in which the file resides is the theme name that is visible in WebFOCUS Designer.

7. Right-click the newly copied theme CSS file, and then click **Edit**.

   The Text Editor window opens.

8. Modify the code to achieve the desired look of the theme.

   In this example, you could change the background color from white #fff to yellow #ffff00.

9. Save and close the Text Editor.
10. Optionally, configure a related content theme by creating a StyleSheet (.sty) file called theme. You can copy this from an existing theme folder, such as the Light folder, as well.

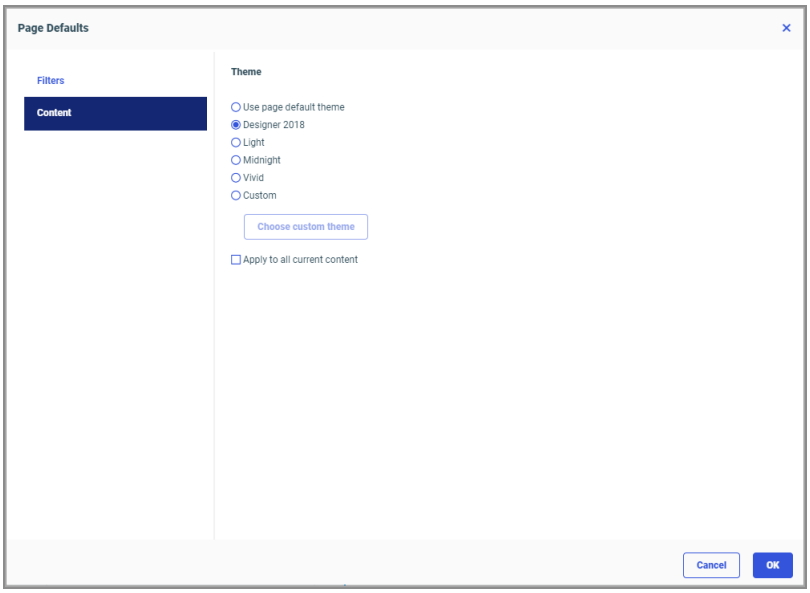
    The styling properties in the StyleSheet is applied automatically to content on the page when your custom theme is used, unless that content has a different theme explicitly assigned.
11. In WebFOCUS Designer, apply the new custom theme to a page, as described in Apply a Theme to a Page.

    An example of a new theme applied to a page is shown in the following image.

    Notice that the content theme, or StyleSheet, associated with the page theme was automatically applied to the content on the page.
12. Save your changes.

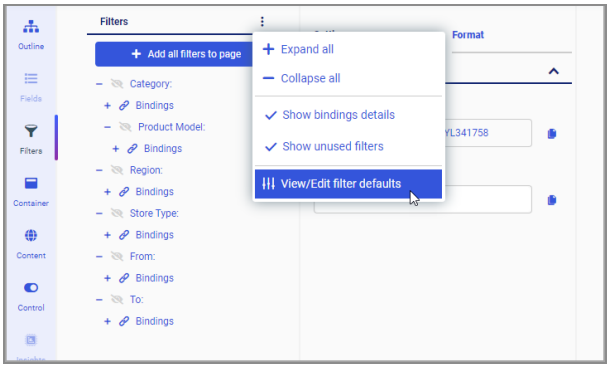
Customizing Assembled Page Defaults

You can customize your default page settings to ensure consistency of your styling, as well as display of content and filters. These settings are available from the Page Defaults dialog, shown in the following image.



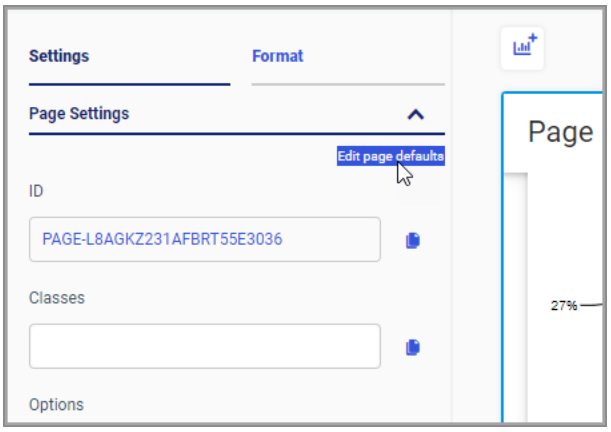
There are two tabs in the Page Defaults dialog: Filters and Content, each corresponding to the area for which the defaults can be set. You can access the Page Defaults dialog in one of two ways:

- By clicking the ellipsis icon inside the Filters tab on the sidebar, as shown in the following image.



  When accessed from this location, the Page Defaults dialog automatically displays the Filters tab.

- By clicking the **Edit page defaults** link in the Page Setting panel, as shown in the following image.



When accessed from this location, the Page Defaults dialog automatically displays the Content tab.

Customizing Styling Defaults for Assembled Page Content

When adding content to an assembled page, you can customize the default theme of your content on the page level. The options for the default Theme setting are as follows:

- **Use page default theme.** Applies the current default theme to the page.
- **Designer 2018.** Applies the Designer 2018 theme to the page.
- **Light.** Applies the Light theme to the page.
- **Midnight.** Applies the Midnight theme to the page.
- **Vivid.** Applies the Vivid theme to the page.
- **Custom.** Enables you to select a previously created custom theme and apply it to the page.
- **Apply to all current content.** If selected, updates all content that is displayed on the canvas to reflect the specified theme.

Once the default theme is configured on the page level, the new content added to the page reflects this theme, regardless whether it is added at design time or at run time using the **Add Content** button.

Configure Page Content Defaults

Procedure

1. Launch WebFOCUS Designer in the Assembled mode and select a page layout.
2. From the Page Settings pane, click the **Edit page defaults** link.

   The Page Defaults dialog opens.
3. Make your selection and click **OK**.
4. Add content to the canvas.

   The content theme corresponds to the selection that you made inside the Page Defaults dialog.
5. To change your default theme styling, click the Page Header to invoke the Page Settings pane, and then click the **Edit page defaults** again.

   The Page Defaults dialog opens.
6. Make a different theme choice, select the **Apply to all current content** checkbox, and then click **OK**.

   All existing content on the canvas is updated to reflect the new default theme. All subsequently added content will also reflect this new default theme.

Customizing Styling Defaults for Assembled Page Filters

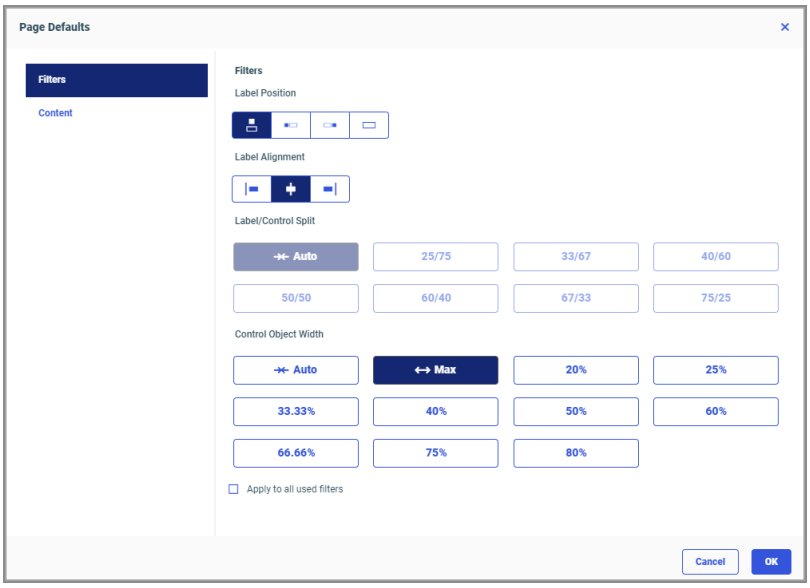
When applying filters to an assembled page, you can customize the default styling of your filters on the page level. You can set default parameters for the following styling options:

- **Label Positions.** Controls the position of the filter label in the relation to the control. The options are above, right, left, and no label.
- **Label Alignment.** Controls the alignment of the filter label. The options are left, right, and center.
- **Label/Control Split.** Controls the space ratio between the label and control inside the cell. This option is only available when the label position is set to right or left.
- **Control Object Width.** Sets the width of the control in relation to the filter cell. The

options are:

- **Auto.** Adjusts the width of the control automatically to accommodate the name of each value.
- **Max.** Fills the entire filter cell. This is the default value.
- **Percentages.** Set the control width to various percentages, as they relate to the filter cell.

The Filters tab of the Page Defaults dialog is shown in the following image.



Once the default filter styling options are configured on the page level, the new controls added to the page reflects these specifications, regardless of whether they are added at design time or at run time using the **Add Content** button.

Keep in mind that in cases where the filter styling is explicitly set by a user, this user setting is retained as the original setting. For example, if a user sets a label position to **right**, and the page defaults setting has the filter position set to **left**, when this filter is removed and re-added, its label position is again set to **right**. When a user applies filter defaults to existing filters or saves a particular filter style as a page default, these filters are then considered default-styled and will retain the new styling when removed and re-added.

You can configure default filter styling in one of two ways: from the Filters tab on the sidebar and directly from the filter grid.

Configure Filter Styling Defaults from the Filter Tab

You can set default styling for assembled page filters before you add any filters to your page.

Procedure

1. Launch WebFOCUS Designer in the Assembled mode and add parameterized content to the canvas.
2. Click the ellipses icon in the upper-right corner of the Filters tab of the sidebar, and then point to **View/Edit filter defaults**.

   The Page Defaults dialog opens.
3. Make your styling choices.
4. If you have any filters displayed on the canvas and want these new styling choices applied to them, select the **Apply to all used filters** checkbox.
5. Click **OK**.
6. Add some or all filters to the page.

   Observe that the styling of your filters reflects the choices you just made.

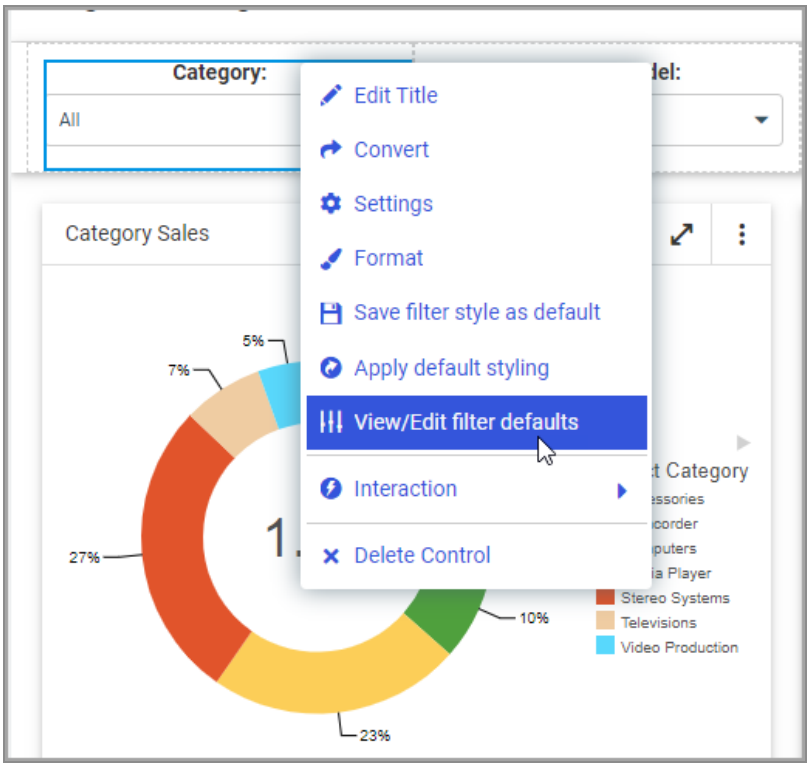
Configure Filter Styling Defaults from the Filter Grid

You can set default styling for assembled page filters directly from your filter grid. Using this method, you can also override the existing default styling that you configured earlier.

Procedure

1. Launch WebFOCUS Designer in the Assembled mode and add parameterized content to the canvas.
2. From the Filters tab of the sidebar, right-click some of the filters, and click **Add to page**.

   Controls to your parameters are added to the page filter toolbar.
3. Right-click a filter control and click **View/Edit filter defaults**, as shown in the following image.



The Page Defaults dialog opens.

4. Make your styling choices and click **OK**.
5. From the Filters tab on the sidebar, add another filter to the page.

   Notice that this new filter displays the new default styling. You can now make one of the following choices.

   - Right-click the previously added filters, and click **Apply default styling** to match these filters to the new filter on the page.
   - Right-click one of the previously added filters, and click **Save filter style as default** to ensure that all subsequent filters added to the page will match the styling of this filter.

     > **Note:** If you want to quickly change all existing filters on the page to match this new default styling, open the Page Defaults again, select the **Apply to all used filters** checkbox, and click **OK**.

   You can also multi-select filter controls on the page, right-click either one of them, point to **View/Edit filter defaults**, and change filter defaults for these items; or you

can click **Apply default styling** to change the multi-selected items to the existing filter default. Note that the **Save filter style as default** option is inactive when you multi-select filter controls.

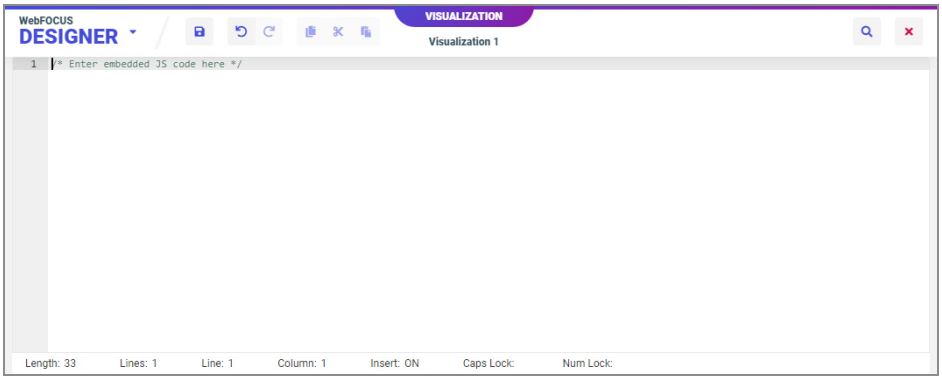
For more information on filter styling, see Adding Filters to Visualization.

Applying Custom CSS and JavaScript Code to a Page

You can apply custom cascading style sheet (CSS) properties and JavaScript code to a page, allowing you to significantly enhance the page with countless styling options and run-time behaviors using code that you write yourself. CSS makes it easy to style different elements on a page by applying various styling properties to them, while JavaScript is a robust programming language that you can use to customize a page with dynamic and interactive features not normally available in WebFOCUS Designer.

This feature is intended for content developers with CSS and JavaScript coding experience. The CSS and JavaScript options are available to developers, administrators, and users with text editor access.

You can add custom CSS and JavaScript to a page by typing code into the CSS and Javascript text editors, respectively. To access the CSS or JavaScript text editor, click **Outline** on the sidebar, and then select **CSS** or **JavaScript**. The text editor opens over the canvas, and you can type your code into it, as shown in the following image.



The code that you write can reference classes that you assign to different components on the page by selecting them and assigning a class name, using the Classes property on the Format tab.

To return to the canvas, click the close icon in the corner of the page.

When you use the text editor, the WebFOCUS Designer toolbar provides additional options to copy, cut, paste, and find and replace your text. The text editor also includes built-in features such as syntax highlighting, code folding, line numbering, autocomplete, alerts, indent guides, and a status bar. These features facilitate CSS and JavaScript code development and debugging by improving clarity and navigability in the text editor.

Note: Custom CSS and JavaScript are not displayed in the canvas. You must run the visualization to see the results of your custom code.

Styling Pages With Custom CSS

Cascading style sheets, or CSS, is a commonly used language that allows you to style different components on a page. CSS properties include font style, text color, background color, and much more. Custom CSS can be applied to specific objects on a page by specifying a CSS class for the object, and then using a class selector in your CSS code.

To specify a CSS class for an object on a page, select the object and, on the Properties panel, type a class name into the text box for the **Classes** property. You can specify multiple classes for an object by separating the class names with spaces, and you are encouraged to use the same class names for multiple items on the page. When you assign attributes to a class in the CSS tab, they affect all elements on the page that are assigned to that class.

Change the Color of a Panel Using CSS

You can change the background color of a panel by assigning a class to the panel and then adding the background-color attribute to the class using CSS.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

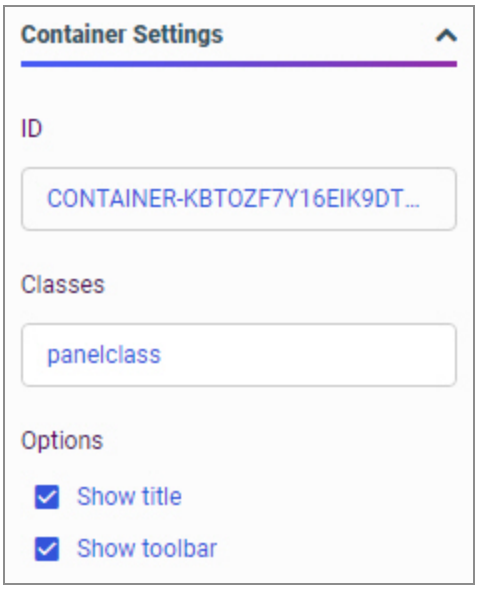
   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a

single content item.

3. Click the **Convert to page** button to transform the visualization from a single content item to a page.
4. Optionally, create content in the visualization and add new containers to the page for additional content.
5. Select a container on the page.
6. On the Settings tab of the Properties panel, in the text box for the **Classes** property, type a class name of your choice, as shown in the following image.



7. Click **Outline** on the sidebar to display the visualization outline.
8. Click **CSS**.

   The CSS text editor opens.
9. Add a CSS declaration to change the background-color attribute for the class used by the panel.

   a. Reference the class name that you specified in the Classes property.

      Type a period (.) followed immediately by the class name, then an opening curly bracket ({), and press the Enter key.

      The closing bracket is added automatically.

   b. Within the brackets, type **background-color**, followed by a colon and then a

color string.

For example, to make the color of a panel, for which panelclass is the value of the Classes property, to a bright blue, you could use the following CSS declaration.

```
.panelclass {

    background-color: rgb(0,180,240);

}
```

10. Save the visualization and close WebFOCUS Designer.
11. Run the visualization from the Hub or Home Page.

    The custom CSS is applied to the specified container.

Enhancing Pages With Custom JavaScript

You can use custom JavaScript to enhance the functionality of components on a page. Any component created on the page using the WebFOCUS Designer canvas can be modified in the JavaScript text editor by referencing a CSS class name specified in the Classes field of the Properties panel for the object, or using the WebFOCUS Designer JavaScript API, to standardized classes that correspond to different component types in a page or portal. Each component class can utilize a set of predefined methods in addition to custom JavaScript. You can even use JavaScript to add objects to a page entirely through code, without using the canvas at all.

Add a Button and a Menu Item to a Panel Container Using Custom JavaScript

You can use custom JavaScript code to add a button and a menu item to a panel that you have added to a page. You can configure the button and menu item to run a command of your choice, such as a URL call.

For information about different JavaScript object classes, see the Applying Custom CSS and JavaScript Code to a Page reference information below.

Procedure

1. Open WebFOCUS Designer. On the WebFOCUS Hub, click the plus menu and click **Create Visualizations**, or, on the WebFOCUS Home Page, click **Visualize Data**.

   WebFOCUS Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, WebFOCUS Designer loads with options to create a single content item.

3. Click the **Convert to page** button to transform the visualization from a single content item to a page.

4. Optionally, create content in the visualization and add new containers to the page for additional content.

5. Select a container on the page.

6. On the Settings tab of the Properties panel, in the text box for the **Classes** property, type a class name of your choice.

7. Click **Outline** on the sidebar to display the visualization outline.

8. Click **JavaScript**.

   The JavaScript text editor opens.

9. To have the button and menu item appear when the page loads, use the iba_pageloaded event listener by adding the following syntax:

   ```
   window.addEventListener("iba_pageloaded", function (e){

   });
   ```

   The code to add a button and menu item goes within this event listener command.

10. Add a button to the panel using JavaScript.

    a. First, within the iba_pageloaded event listener, create a variable to represent the panel, such as the following:

       ```
       var panel = document.querySelector(".class").ibaObject;
       ```

       where:

panel

Is the name of the variable that you define to represent the panel.

class

Is the name you previously typed in the Classes property for the panel on the page.

b. After the panel variable, define the style and appearance of the button and add it to the panel, such as in the following syntax example. This example uses a home icon and places the button before the default resize button:

```
var button = panel.addButton(
    {"glyphClasses": "fa fa-home", "class": "buttonClass",
        "tooltip": "tooltip text"},
    ".pd-container-title-button-resize", true);
```

where:

button

Is the name of the variable that you define to represent the button.

panel

Is the variable representing the panel, defined in step 10a.

fa fa-home

Is a glyph class for a Font Awesome icon that looks like a house.

buttonClass

Is a CSS class assigned to the button itself. You can use this to apply CSS styling to the button, or reference the button elsewhere in your JavaScript code.

tooltip text

Is the text that you want to appear in the tooltip when you point to the

button.

.pd-container-title-button-resize

Is the class of the resize button on the panel. This is the sibling of the button that you are currently adding.

true

When the value of the before property is set to *true*, the button is placed before the sibling. Otherwise, it is placed after the sibling. If no sibling is specified, it is ordered last.

c. After defining the panel button, create an event listener that allows the button to run a specified action. The following example causes the button to open the TIBCO website in a new window when it is clicked.

```
button.addEventListener("click", function(){

    window.open("https://www.tibco.com/");

    });
```

where:

button

Is the variable name that you assigned to the button in step 10b.

11. Add a menu item to the panel's run-time menu using JavaScript.

a. Create a variable to define the menu item, such as in the following example.

```
var menu = panel.addMenuItem({

    "text": "Menu text", "glyphClasses": "fa fa-
globe","class": "menu-class"},

    ".class>.ibx_menu_item", true);
```

where:

menu

Is a variable name that you want to use to represent the menu item.

panel

Is the name of the variable representing the panel to which the menu is added.

Menu text

Is the text of the menu item.

fa fa-globe

Is a glyph class for a Font Awesome icon that looks like the Earth.

menu-class

Is a CSS class assigned to the menu item itself. You can use this to apply CSS styling to the menu item, or reference the menu item elsewhere in your JavaScript code.

".class>.ibx_menu_item"

Is a selector for the Refresh button in the panel menu, where *class* is the CSS class assigned to the panel using the Classes property.

true

When the value of the before property is set to *true*, the menu item is placed before the sibling, which in this case is the Refresh option. Otherwise, it is placed after the sibling. If no sibling is specified, it is ordered last in the menu.

b. After defining the menu item, create an event listener that allows the button to run a specified action. The following example causes the menu item to run an HTML page in a new window through a URL call when it is clicked.

```
menu.addEventListener("click", function(){

    window.open(

       "http://localhost:8080/ibi_apps/run.bip?BIP_REQUEST_
```

```
TYPE=BIP_LAUNCH&BIP_
folder=IBFS%253A%252FWFC%252FRepository%252FPublic%252F2019%25
2FHTML%252F&BIP_item=html_page.htm"

    );

});
```

where:

menu

Is the variable name that you assigned to the menu item in step 11a.

The complete custom JavaScript may resemble the following.

```
window.addEventListener("iba_pageloaded", function (e){

    var panel = document.querySelector(".map-panel").ibaObject;


    var tibcosite = panel.addButton({

            "glyphClasses": "fa fa-home", "class": "tibcoButton",
"tooltip": "Click to display help."},

        ".pd-container-title-button-resize", true);

    tibcosite.addEventListener("click", function(){

        window.open("https://www.tibco.com/");});

    var runReport = panel.addMenuItem({

            "text": "Country Report", "glyphClasses": "fa fa-
globe","class": "globemenu"},

        ".map-panel>.ibx_menu_item",  true);

    runReport.addEventListener("click", function(){

        window.open(

            "http://localhost:8080/ibi_apps/run.bip?BIP_REQUEST_
```

```
TYPE=BIP_LAUNCH&BIP_
folder=IBFS%253A%252FWFC%252FRepository%252FPublic%252F2019%252FHTM
L%252F&BIP_item=Basic_2_ctrl_page.htm");

    });

});
```

12. Save the page.

    Changes made using custom CSS and JavaScript do not appear on the canvas at design time. To see the impact of your custom code, you must run the visualization.

13. On the Hub or Home Page, right-click the visualization that you just created and click **Run in new window**.

    The visualization opens in a new browser tab or window, and the customized button and menu item are available. When clicked, they open the links you specified for them in a new tab or window.

Use JavaScript to Automatically Resize an Image on a Page

Since the panels in a responsive page resize to fit the browser window, images added to the page may not always fit properly. If the image is too big, only part of the image may show in the panel, and scrollbars may be added. If the image is too small, the panel background may show around the image.

To autosize an image to fit a panel, you can use jQuery to set the height and width CSS properties for an image in a specified container. You can specify the container by referencing its class, which you can set using the Classes property on the Settings tab.

An example of the final JavaScript code is shown below:

```
$('.class').closest('.grid-stack-item').addClass('autoheight');

$('.class iframe').attr('scrolling','no').on('load', function(e){

       $(this).contents().find('img').height('100%');

       $(this).contents().find('img').width('100%');
```

```
})
```

where:

class

Is a class assigned to the panel that contains the image to be autosized.

.attr('scrolling','no')

Disables the generation of scrollbars in the container.

.height('100%'), .width('100%')

Sets the image to fill the height and width of the container. This may distort the image, depending on the dimensions of the container. As an alternative, replace **100%** with **auto** for either the height or width, to maintain the height-to-width ratio at all sizes. Using **auto** may reveal the panel background or cut off part of the image, depending on the dimensions of the container.

Procedure

1. On the Hub or Home Page, click the plus button and then click **Assemble Visualizations**.

   WebFOCUS Designer opens to assemble a page from existing content.

2. With **Content** selected on the sidebar, navigate to the location of an image that has been uploaded to the Repository and drag the image onto the canvas.

   The image is added to a container on the page. The size of the image in the container is the absolute size of the uploaded image file.

3. Optionally, resize and reposition the container that contains the image, and add other items to the page.

4. Select the container that holds the image. On the **Settings** tab of the Properties panel, type a class name of your choice into the Classes text box. This class is used as an identifier for the container in the JavaScript code.

5. Click **Outline** on the sidebar, and then click **JavaScript**.

   The JavaScript text editor opens.

6. Paste the following code into the text editor.

```
$('.class').closest('.grid-stack-item').addClass('autoheight');

$('.class iframe').attr('scrolling','no').on('load', function(e){

       $(this).contents().find('img').height('100%');

       $(this).contents().find('img').width('100%');

})
```

7. Replace **class** in the first two lines with the class name that you specified for the container in Step 4.
8. Click the red X in the top-right corner of the page to return to the page canvas.

   The image still displays at its original size. The height and width properties are only applied when the page is run.
9. Optionally, on the canvas, select the container that contains the image and, on the **Settings** tab on the Properties panel, clear the **Show title** and **Show toolbar** checkboxes to hide the container title and toolbar, so that the image is the only item in the container.
10. On the Visualization toolbar, click **Run in new window** to run the page and run the JavaScript code that you just added.

    The image stretches to fill the entire container at run time.

ibi WebFOCUS Designer JavaScript API Classes

As part of the WebFOCUS Designer JavaScript API, you can use the following predefined classes.

- **ibaObject.** The base automation object.
- **ibaAccordionContainer.** Accordion container automation object.
- **ibaCarouselContainer.** Carousel container automation object.
- **ibaContent.** Content panel automation object.
- **ibaPage.** Page automation object. The event iba_pageloading is triggered on the global window object. *event*.data is the ibaPage object.
- **ibaPanelContainer.** Panel container automation object.

- **ibaPortal.** Portal automation object.
- **ibaSection.** Page section automation object.
- **ibaTabContainer.** Tab container automation object.

A help plug-in with information about each class is packaged with your WebFOCUS installation. It is available through a URL at the following address:

```
http[s]://hostname:port/context/web_resource/doc/automation/index.html
```

where:

hostname

Is the name of the machine on which the WebFOCUS Client is installed.

port

Is the port number on which the server is listening.

context

Is the context root of the WebFOCUS application. For example, *ibi_apps*.

Class: ibaObject

```
new ibaObject(element)
```

Is the base automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

element

Is the node that is being automated.

Available methods include the following:

- **classId()**

  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **customClasses(*classes*, *remove*)**

  Returns a string. Sets or gets custom classes.

  where:

  classes

  String.

  Optional. A space-separated list of classes to be added or removed.

  remove

  Boolean.

  Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**

  Returns an element, the DOM node that is being automated by this object.

Class: ibaPage

```
new ibaPage(element)
```

Is the page automation object. Automation objects are created internally by the system. You never directly instantiate an automation object. The event iba_pageloading is triggered on the global window object. event.data is the ibaPage object.

where:

element

Is the node that is being automated.

The following triggers can be used with the page object:

- **event:iba_pageloaded.** The page is loaded in the running state.
- **event:iba_beforecontentdescribe.** Before the page content filtering information has been retrieved.
- **event:iba_contentdescribed.** After the page content filtering information has been retrieved, but before it has been processed.
- **event:iba_beforecontentload.** Before the content of a panel is about to load.

These are used in the following JavaScript syntax example:

```
window.addEventListener("iba_pageloading", function (e){

    var page = e.data;

    page.element().addEventListener("iba_pageloaded", function(e){

        var page = e.data;

    });

    page.element().addEventListener("iba_beforecontentdescribe",
function (e){

        var describeInfo = e.data;

        var path = describeInfo.path; // The path to the content being
described

        // e.preventDefault() will stop the describe from happening

    });

    page.element().addEventListener("iba_contentdescribed", function (e)
{

        var describeInfo = e.data;

        var path = describeInfo.path; // The path to the content being
described

        var wfDescribe = describeInfo.wfDescribe; // The filtering
information of the content being described

    });

    page.element().addEventListener("iba_beforecontentload", function
(e){

        var loadInfo = e.data;

        var path = loadInfo.path; // The path to the content being
described

        var defaultValues = loadInfo.defaultValues; // If default values
are used to run the content
```

```
        // e.preventDefault() will stop the page from retrieving the
content

    });

});
```

If you add multiple pages with custom JavaScript to the same portal, the iba_pageloading event listener, for the global window object, will run whenever any page in the portal loads. To run your code only when a specific page loads, remove the event listener after the code runs for the desired page using the window.removeEventListener method.

The iba_pageloading event listener can be used to access the page being loaded, since it receives a page object as a parameter. The page object can be stored or used to assign additional event handlers to the page as shown below:

```
function onPageLoading(e) {

    var page = e.data;

    page.element().addEventListener("iba_pageloaded", function(e){

        on load code

    });

   page.element().addEventListener("click", function(e)

   {

       on click code

   });

  window.removeEventListener("iba_pageloading", onPageLoading);

}
```

where:

function onPageLoading

Is an iba_pageloading event listener function.

var page = e.data

Accesses the page object via the event parameter.

on load code

Code to be ran when the page loads.

on click code

Code to be ran when the page is clicked.

window.removeEventListener("iba_pageloading", onPageLoading);

Removes the iba_pageloading listener.

You can use the *context* member object to supply the context information for the page.

Available methods include the following:

- **addButton(*options*, *sibling*, *before*)**

  Returns an element, adding a button to the title bar of the page.

  where:

  options

  Object.

  One or more button options, which can include the following:

  - **icon.** A URL to an image file in .jpeg, .png, or .gif format.
  - **glyph.** A glyph or ligature, such as a Material icon.
  - **glyphClasses.** Glyph classes. For example, 'material-icons'.
  - **class.** Additional CSS classes.
  - **tooltip.** A tooltip for the button.

  sibling

  Selector, element, or jQuery.

  Optional. A sibling to add before or after. The default is Last.

  before

  Boolean.

Add button before or after the specified sibling.

- **addSection(*options*, *sibling*, *before*)**

  Returns an element, adding a section to the page.

  where:

  options

  Object.

  One or more section options, which can include the following:

  - **collapsible.** A Boolean value. When true, the section is collapsible.
  - **collapsed.** A Boolean value. When true, the section is created in a collapsed state.

  sibling

  Selector, element, or jQuery.

  Optional. A sibling to add before or after. The default is Last.

  before

  Boolean.

  Add the section before or after the specified sibling.

- **buttons(*selector*)**

  Returns the page title bar buttons as an array.

  where:

  selector

  Selector, element, or jQuery.

  Is the buttons selector. All is the default.

- **classId()**

  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **containers(*selector*)**

  Returns the page containers as an array.

where:

selector

Selector, element, or jQuery.

Is the containers selector. All is the default.

- **customClasses(*classes*, *remove*)**

  Returns a string. Sets or gets custom classes.

  where:

  classes

  String.

  Optional. A space-separated list of classes to be added or removed.

  remove

  Boolean.

  Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**

  Returns an element, the DOM node that is being automated by this object.

- **refreshFilters()**

  Use to redescribe the existing content and recreate filter panels.

- **removeButton(*button*)**

  Removes one or more buttons from the title bar of the page.

  where:

  button

  Selector, element, or jQuery.

  Optional. Is a button selector. All is the default.

- **removeSection(*selector*)**

  Removes one or more sections from the page.

  where:

selector

Selector, element, or jQuery.

Optional. Is a section selector. All is the default.

- **sections(*selector*)**

  Returns the page sections as an array.

  where:

  selector

  Selector, element, or jQuery.

  Is the section selector. All is the default.

- **title(*title*)**

  Sets the title of the page. If *title* is not passed, the title of the container is returned as a string or jQuery.

  where:

  title

  String.

  Optional. Is the new title of the page.

Class: ibaSection

The ibaSection class extends ibaObject.

```
new ibaSection(element)
```

Is the page section automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

element

Is the DOM node that is being automated.

Available methods include the following:

- **addContainer(*type*, *title*, *col*, *row*, *colSpan*, *rowSpan*)**

  Adds a new container to the section.

  where:

  type

  String.

  Is one of the following container types:

  - 'pane'
  - 'tab'
  - 'accordion'
  - 'carousel'

  title

  String.

  Is the container title.

  col

  Integer.

  Optional. The column of the section to insert to. By default, the container is added to the first available column.

  row

  Integer.

  Optional. The row of the section to insert to. By default, the container is added to the first available row.

  colSpan

  Integer.

  Optional. The width of the container in columns. 3 is the default.

  rowSpan

  Integer.

  Optional. The height of the container in rows. 5 is the default.

- **classId()**

  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **collapsed(*collapsed*)**

  Makes the section collapsed, or returns the current collapsed state or a chainable automation object.

  where:

  collapsed

  Boolean.

  Optional. If true, collapse the section. Otherwise, expand.

- **collapsible(*collapsible*)**

  Makes the section collapsible, or returns the current collapsible state or a chainable automation object.

  where:

  collapsible

  Boolean.

  Optional. If true, make the section collapsible.

- **containers(*selector*)**

  Returns the containers in the section as an array.

  where:

  selector

  Selector, element, or jQuery.

  An optional containers selector. All is the default.

- **customClasses(*classes*, *remove*)**

  Returns a string. Sets or gets custom classes.

  where:

  classes

String.

Optional. A space-separated list of classes to be added or removed.

remove

Boolean.

Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**

  Returns an element, the DOM node that is being automated by this object.

Class: ibaContainer

```
new ibaContainer(element)
```

Is the container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

element

Is the DOM node that is being automated.

Available methods include the following:

- **addButton(*options*, *sibling*, *before*)**

  Returns an element, adding a button to the title bar of the container.

  where:

  options

  Object.

  One or more button options, which can include the following:

  - **icon.** A URL to an image file in .jpeg, .png, or .gif format.
  - **glyph.** A glyph or ligature, such as a Material icon.

- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.
- **tooltip.** A tooltip for the button.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add button before or after the specified sibling.

- **addContent(*path*, *description*, *replaceExisting*)**

Returns elements. Adds new content by replacing the content in the current content panel or adding a sub-panel.

where:

path

String.

Path of the content being added.

description

String.

Description of the content being added.

replaceExisting

Boolean.

Optional. When true, replace the existing content. When false, which is the default, add new content.

- **addMenuItem(*options*, *sibling*, *before*)**

Returns an element, adding a menu item to the container menu.

where:

options

Object.

One or more menu item options, which can include the following:

- **text.** The menu item text.
- **icon.** A URL to an image file in .jpeg, .png, or .gif format.
- **glyph.** A glyph or ligature, such as a Material icon.
- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add the menu item before or after the specified sibling.

- **addMenuSeparator(*options*, *sibling*, *before*)**

Returns an element, adding a separator to the container menu.

where:

options

Object.

Menu separator options. You can use the class property to specify additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add menu separator before or after the specified sibling.

- **buttons(*selector*)**

Returns the container title bar buttons as an array.

where:

selector

Selector, element, or jQuery.

Is the buttons selector. All is the default.

- **classId()**

Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **contents(*selector*)**

Returns the content panels in the container as an array.

where:

selector

Selector, element, or jQuery.

Is the content selector. All is the default.

- **customClasses(*classes*, *remove*)**

Returns a string. Sets or gets custom classes.

where:

classes

String.

Optional. A space-separated list of classes to be added or removed.

remove

Boolean.

Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**

Returns an element, the DOM node that is being automated by this object.

- **removeButton(*button*)**

Removes one or more buttons from the title bar of the container.

where:

button

Selector, element, or jQuery.

Optional. Is a button selector. All is the default.

- **removeContent(*selector*)**

  Removes content from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a content selector. All is the default.

- **removeMenuItem(*selector*)**

  Removes one or more menu items from the container menu.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu item selector. All is the default.

- **removeMenuSeparator(*selector*)**

  Removes one or more separators from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu separator selector. All is the default.

- **title(*title*)**

  Sets the title of the container. If *title* is not passed, the title of the container is returned as a string or jQuery.

  where:

  title

String.

Optional. Is the new title of the container.

Class: ibaAccordionContainer

The ibaAccordionContainer class extends ibaContainer.

```
new ibaAccordionContainer(element)
```

Is the accordion container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

element

Is the DOM node that is being automated.

Available methods include the following:

- **addButton(*options*, *sibling*, *before*)**

  Returns an element, adding a button to the title bar of the accordion container.

  where:

  options

  Object.

  One or more button options, which can include the following:

  - **icon.** A URL to an image file in .jpeg, .png, or .gif format.
  - **glyph.** A glyph or ligature, such as a Material icon.
  - **glyphClasses.** Glyph classes. For example, 'material-icons'.
  - **class.** Additional CSS classes.
  - **tooltip.** A tooltip for the button.

  sibling

  Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add button before or after the specified sibling.

- **addContent(*path*, *description*, *replaceExisting*)**

Returns elements. Adds new content by replacing the content in the current content panel or adding a new accordion tab.

where:

path

String.

Path of the content being added.

description

String.

Description of the content being added.

replaceExisting

Boolean.

Optional. When true, replace the existing content. When false, which is the default, add new content.

- **addMenuItem(*options*, *sibling*, *before*)**

Returns an element, adding a menu item to the accordion container menu.

where:

options

Object.

One or more menu item options, which can include the following:

  - **text.** The menu item text.
  - **icon.** A URL to an image file in .jpeg, .png, or .gif format.

- **glyph.** A glyph or ligature, such as a Material icon.
- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add the menu item before or after the specified sibling.

- **addMenuSeparator(*options*, *sibling*, *before*)**

Returns an element, adding a separator to the accordion container menu.

where:

options

Object.

Menu separator options. You can use the class property to specify additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add menu separator before or after the specified sibling.

- **buttons(*selector*)**

Returns the container title bar buttons as an array.

where:

selector

Selector, element, or jQuery.

Is the buttons selector. All is the default.

- **classId()**

  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **contents(*selector*)**

  Returns the content panels in the container as an array.

  where:

  selector

  Selector, element, or jQuery.

  Is the content selector. All is the default.

- **customClasses(*classes*, *remove*)**

  Returns a string. Sets or gets custom classes.

  where:

  classes

  String.

  Optional. A space-separated list of classes to be added or removed.

  remove

  Boolean.

  Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**

  Returns an element, the DOM node that is being automated by this object.

- **removeButton(*button*)**

  Removes one or more buttons from the title bar of the container.

  where:

  button

Selector, element, or jQuery.

Optional. Is a button selector. All is the default.

- **removeContent(*selector*)**

  Removes content from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a content selector. All is the default.

- **removeMenuItem(*selector*)**

  Removes one or more menu items from the container menu.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu item selector. All is the default.

- **removeMenuSeparator(*selector*)**

  Removes one or more separators from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu separator selector. All is the default.

- **selectContent(*selector*)**

  Returns an element. Selects a content pane in the accordion container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a content selector. All is the default.

- **title(*title*)**

  Sets the title of the container. If *title* is not passed, the title of the container is returned as a string or jQuery.

  where:

  title

  String.

  Optional. Is the new title of the container.

Class: ibaCarouselContainer

The ibaCarouselContainer class extends ibaContainer.

```
new ibaCarouselContainer(element)
```

Is the carousel container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

element

Is the DOM node that is being automated.

Available methods include the following:

- **addButton(*options*, *sibling*, *before*)**

  Returns an element, adding a button to the title bar of the carousel container.

  where:

  options

  Object.

  One or more button options, which can include the following:

  - **icon.** A URL to an image file in .jpeg, .png, or .gif format.
  - **glyph.** A glyph or ligature, such as a Material icon.

- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.
- **tooltip.** A tooltip for the button.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add button before or after the specified sibling.

- **addContent(*path*, *description*, *replaceExisting*)**

Returns elements. Adds new content by replacing the content in the current content panel or adding a new carousel slide.

where:

path

String.

Path of the content being added.

description

String.

Description of the content being added.

replaceExisting

Boolean.

Optional. When true, replace the existing content. When false, which is the default, add new content.

- **addMenuItem(*options*, *sibling*, *before*)**

Returns an element, adding a menu item to the carousel container menu.

where:

options

Object.

One or more menu item options, which can include the following:

- **text.** The menu item text.
- **icon.** A URL to an image file in .jpeg, .png, or .gif format.
- **glyph.** A glyph or ligature, such as a Material icon.
- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add the menu item before or after the specified sibling.

- **addMenuSeparator(*options*, *sibling*, *before*)**

Returns an element, adding a separator to the carousel container menu.

where:

options

Object.

Menu separator options. You can use the class property to specify additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add menu separator before or after the specified sibling.

- **buttons(*selector*)**

Returns the container title bar buttons as an array.

where:

selector

Selector, element, or jQuery.

Is the buttons selector. All is the default.

- **classId()**

Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **contents(*selector*)**

Returns the content panels in the container as an array.

where:

selector

Selector, element, or jQuery.

Is the content selector. All is the default.

- **customClasses(*classes*, *remove*)**

Returns a string. Sets or gets custom classes.

where:

classes

String.

Optional. A space-separated list of classes to be added or removed.

remove

Boolean.

Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**

Returns an element, the DOM node that is being automated by this object.

- **removeButton(*button*)**

Removes one or more buttons from the title bar of the container.

where:

button

Selector, element, or jQuery.

Optional. Is a button selector. All is the default.

- **removeContent(*selector*)**

  Removes content from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a content selector. All is the default.

- **removeMenuItem(*selector*)**

  Removes one or more menu items from the container menu.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu item selector. All is the default.

- **removeMenuSeparator(*selector*)**

  Removes one or more separators from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu separator selector. All is the default.

- **selectContent(*selector*)**

  Returns an element. Selects a content pane in the carousel container.

  where:

  selector

Selector, element, or jQuery.

Optional. Is a content selector. All is the default.

- **title(*title*)**

  Sets the title of the container. If *title* is not passed, the title of the container is returned as a string or jQuery.

  where:

  title

  String.

  Optional. Is the new title of the container.

Class: ibaPanelContainer

The ibaPanelContainer class extends ibaContainer.

```
new ibaPanelContainer(element)
```

Is the panel container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

element

Is the DOM node that is being automated.

Available methods include the following:

- **addButton(*options*, *sibling*, *before*)**

  Returns an element, adding a button to the title bar of the panel container.

  where:

  options

  Object.

  One or more button options, which can include the following:

- **icon.** A URL to an image file in .jpeg, .png, or .gif format.
- **glyph.** A glyph or ligature, such as a Material icon.
- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.
- **tooltip.** A tooltip for the button.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add button before or after the specified sibling.

- **addContent(*path*, *description*, *replaceExisting*)**

Returns elements. Adds new content by replacing the content in the current content panel or adding a new panel.

where:

path

String.

Path of the content being added.

description

String.

Description of the content being added.

replaceExisting

Boolean.

Optional. When true, replace the existing content. When false, which is the default, add new content.

- **addMenuItem(*options*, *sibling*, *before*)**

Returns an element, adding a menu item to the container menu.

where:

options

Object.

One or more menu item options, which can include the following:

- **text.** The menu item text.
- **icon.** A URL to an image file in .jpeg, .png, or .gif format.
- **glyph.** A glyph or ligature, such as a Material icon.
- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add the menu item before or after the specified sibling.

- **addMenuSeparator(*options*, *sibling*, *before*)**

Returns an element, adding a separator to the container menu.

where:

options

Object.

Menu separator options. You can use the class property to specify additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add menu separator before or after the specified sibling.

- **buttons(*selector*)**

  Returns the container title bar buttons as an array.

  where:

  selector

  Selector, element, or jQuery.

  Is the buttons selector. All is the default.

- **classId()**

  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **contents(*selector*)**

  Returns the content panels in the container as an array.

  where:

  selector

  Selector, element, or jQuery.

  Is the content selector. All is the default.

- **customClasses(*classes*, *remove*)**

  Returns a string. Sets or gets custom classes.

  where:

  classes

  String.

  Optional. A space-separated list of classes to be added or removed.

  remove

  Boolean.

  Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**

Returns an element, the DOM node that is being automated by this object.

- **removeButton(*button*)**

  Removes one or more buttons from the title bar of the container.

  where:

  button

  Selector, element, or jQuery.

  Optional. Is a button selector. All is the default.

- **removeContent(*selector*)**

  Removes content from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a content selector. All is the default.

- **removeMenuItem(*selector*)**

  Removes one or more menu items from the container menu.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu item selector. All is the default.

- **removeMenuSeparator(*selector*)**

  Removes one or more separators from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu separator selector. All is the default.

- **title(*title*)**

  Sets the title of the container. If *title* is not passed, the title of the container is

returned as a string or jQuery.

where:

title

String.

Optional. Is the new title of the container.

Class: ibaTabContainer

The ibaTabContainer class extends ibaContainer.

```
new ibaTabContainer(element)
```

Is the carousel container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

element

Is the DOM node that is being automated.

Available methods include the following:

- **addButton(*options*, *sibling*, *before*)**

  Returns an element, adding a button to the title bar of the tab container.

  where:

  options

  Object.

  One or more button options, which can include the following:

  - **icon.** A URL to an image file in .jpeg, .png, or .gif format.
  - **glyph.** A glyph or ligature, such as a Material icon.
  - **glyphClasses.** Glyph classes. For example, 'material-icons'.

- **class.** Additional CSS classes.
- **tooltip.** A tooltip for the button.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add button before or after the specified sibling.

- **addContent(*path*, *description*, *replaceExisting*)**

Returns elements. Adds new content by replacing the content in the current content panel or adding a new tab.

where:

path

String.

Path of the content being added.

description

String.

Description of the content being added.

replaceExisting

Boolean.

Optional. When true, replace the existing content. When false, which is the default, add new content.

- **addMenuItem(*options*, *sibling*, *before*)**

Returns an element, adding a menu item to the tab container menu.

where:

options

Object.

One or more menu item options, which can include the following:

- **text.** The menu item text.
- **icon.** A URL to an image file in .jpeg, .png, or .gif format.
- **glyph.** A glyph or ligature, such as a Material icon.
- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add the menu item before or after the specified sibling.

- **addMenuSeparator(*options*, *sibling*, *before*)**

Returns an element, adding a separator to the tab container menu.

where:

options

Object.

Menu separator options. You can use the class property to specify additional CSS classes.

sibling

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

before

Boolean.

Add menu separator before or after the specified sibling.

- **buttons(*selector*)**

Returns the container title bar buttons as an array.

where:

selector

Selector, element, or jQuery.

Is the buttons selector. All is the default.

- **classId()**

Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **contents(*selector*)**

Returns the content panels in the container as an array.

where:

selector

Selector, element, or jQuery.

Is the content selector. All is the default.

- **customClasses(*classes*, *remove*)**

Returns a string. Sets or gets custom classes.

where:

classes

String.

Optional. A space-separated list of classes to be added or removed.

remove

Boolean.

Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**

Returns an element, the DOM node that is being automated by this object.

- **removeButton(*button*)**

Removes one or more buttons from the title bar of the container.

where:

button

Selector, element, or jQuery.

Optional. Is a button selector. All is the default.

- **removeContent(*selector*)**

  Removes content from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a content selector. All is the default.

- **removeMenuItem(*selector*)**

  Removes one or more menu items from the container menu.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu item selector. All is the default.

- **removeMenuSeparator(*selector*)**

  Removes one or more separators from the container.

  where:

  selector

  Selector, element, or jQuery.

  Optional. Is a menu separator selector. All is the default.

- **selectContent(*selector*)**

  Returns an element. Selects a content pane in the tab container.

  where:

  selector

Selector, element, or jQuery.

Optional. Is a content selector. All is the default.

- **title(*title*)**

  Sets the title of the container. If *title* is not passed, the title of the container is returned as a string or jQuery.

  where:

  title

  String.

  Optional. Is the new title of the container.

Class: ibaContent

The ibaContent class extends ibaObject.

```
new ibaContent(element)
```

Is the content panel automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

element

Is the DOM node that is being automated.

Available methods include the following:

- **classId()**

  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **customClasses(*classes*, *remove*)**

  Returns a string. Sets or gets custom classes.

  where:

  classes

String.

Optional. A space-separated list of classes to be added or removed.

remove

Boolean.

Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**

  Returns an element, which is the DOM node that is being automated by this object.

- **path()**

  Returns the path of the content as a string.

Adding Panels to a Responsive Container

You can utilize responsive panel in panel behavior by adding items to a panel group container. When you run the page, top-level containers in the page, including the panel group container, fold responsively based on the size of the browser, and the panels within the panel group container fold based on its current size, independent of the rest of the page. Additionally, items in the panel group container are kept together when folding occurs, making the panel group container a good way to group together closely related content that you want to be visually separated from the other items on the page. This is particularly true when related items are arranged vertically, as items typically wrap based on rows.

To create a panel group container, click the **Container** tab on the sidebar, select the **Panel group** container, and drag it onto the canvas. You can then resize it like any other container.

To add a panel to a panel group container, drag a new content item or another container from the Container tab on the sidebar into it. You can then resize the new container inside the panel group container. You can also add an existing container on the page to a panel group by holding the Ctrl key and dragging the container into it.

Once you have created it, you can right-click an area of blank space within the panel group to duplicate it, delete the panel group and its contents, or remove the panel group but keep its constituent containers on the page. You can also right-click an item and click **Move to canvas** to remove it and any other concurrently selected panels from the panel group container. The item is moved to a nearby, empty area of the page. If you selected

multiple panels inside a panel group, then they are placed on the canvas near the panel that you right-clicked.

You can also select the panel group and use the Properties panel to add a toolbar and title to the panel group container. Properties applied to the entire page or to the panel group container, such as margins or styling, affect all panels within it, unless specifically overridden.

Enabling Container Customization

When creating a page with external content, you can enable users to select content to display at run time, which can make portal pages more engaging, useful, and interactive. With this feature you can also control which items users can access, by assigning a specific path to the Add content button in the Properties panel. This feature can be used with panel, tab, carousel, and accordion containers. If you enable this feature on a multi-content container, the Add content button automatically appears on every new tab, slide, or area. If you combine a container that is unlocked for container customization with another container, container customization is turned off in the resulting combined container.

Configure the Container Customization Properties

Procedure

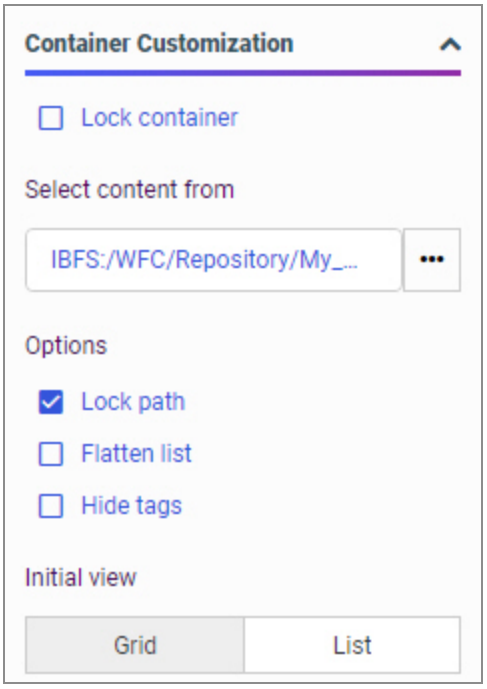
1. In a visualization using external content, drag an empty panel or a content item onto the canvas.
2. With the panel or content item selected, in the Properties panel, on the Settings tab, disable the **Lock container** option.

   If you used an empty panel, the **Add content** icon displays in the middle of the selected panel.
3. If you want to direct your selection to a specific area in the repository, click the ellipses next to the **Select content from** property to select a default workspace or folder that you want to display for content selection at run time.

4. Keep the **Lock path** option selected, if you want to limit your selection to the path specified in the previous step. Otherwise, users can navigate to other workspaces to access content there in addition to the default path.
5. Optionally, select the **Flatten list** option, if you want to hide the folder hierarchy inside your selection area and only display items.
6. Optionally, select the **Hide tags** option, if you want to hide all tags from your selection area.
7. Configure the **Initial View** option, choosing either Grid or List, to set the initial appearance of the window where users select the content to display.

   > **Note:** Users can change the view at run time inside the Select Item dialog.

   The following image shows an example of the configured Container Customization properties.

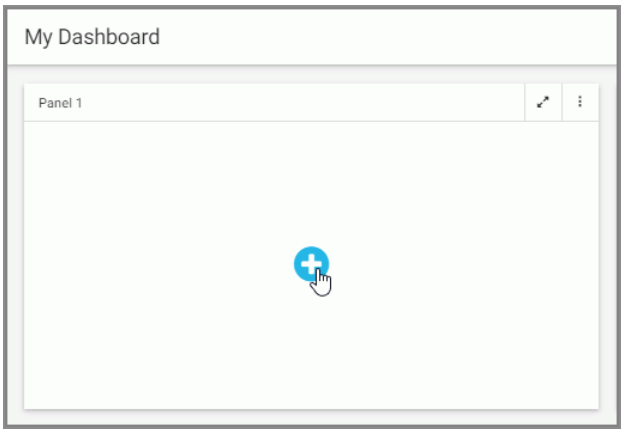
   

8. Save the page.

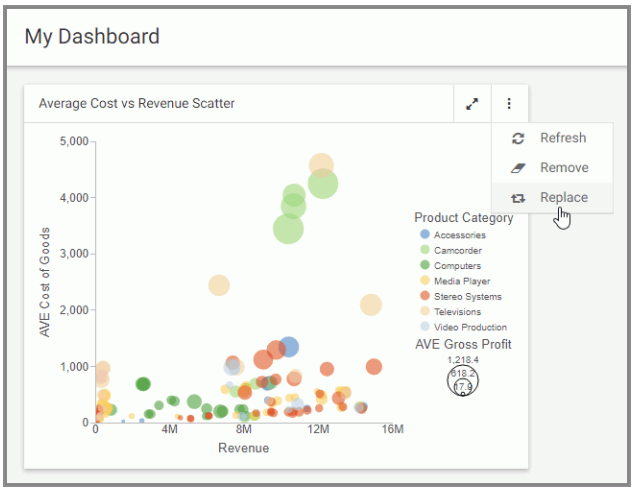
Select Content at Run Time

Procedure

1. Run the page that features interactive panels.
2. Click the **Add content** button, as shown in the following image.



If you enabled container customization for a container with content in it, click the Options menu and then click **Replace**, as shown in the following image.



The Select Item dialog opens.

If the **Lock path** option is disabled, you can navigate between workspaces using the breadcrumb trail.

If the **Flatten list** option is disabled, you can navigate between the folders within the

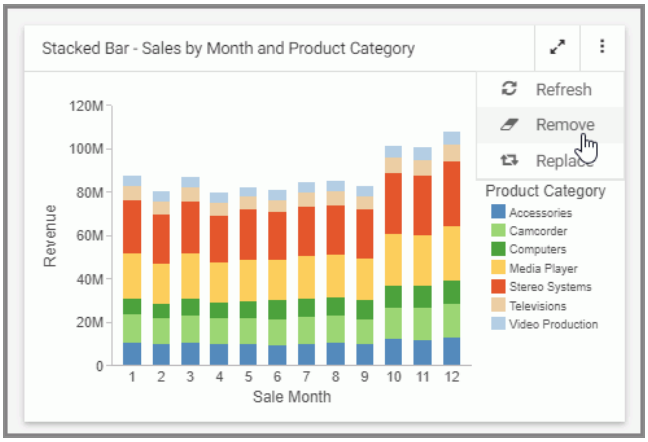
selection area hierarchy.

You can also use the search function, toggle between the Grid and List views, and refresh your selection area.

3. Make a selection and click **Add**.

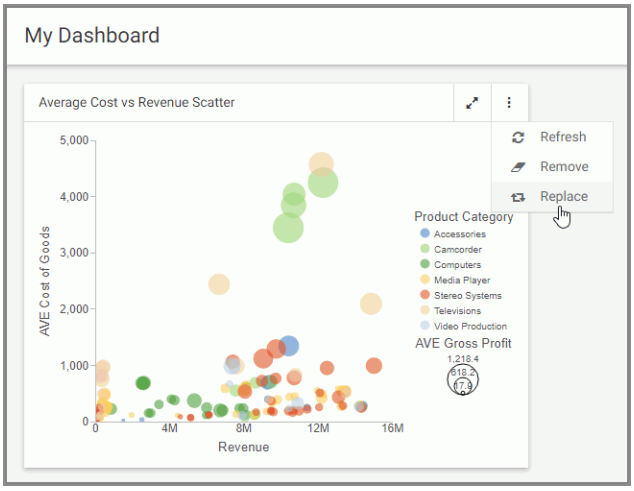
   The selected item displays inside the panel.

4. To go back to the initial view of the interactive panel, click **Options**, and then click **Remove**, as shown in the following image.



   The item is removed from the panel, and the **Add content** button displays.

5. To replace an item with another item, click **Options**, and then click **Replace**, as shown in the following image.



   The Select Item dialog opens, and you can make a new selection.

Note: When the page is used in a portal, content customization changes that the user makes at run time to unlocked containers are remembered if the user has the Save Portal Customization privilege. If the user does not have this privilege or if the content customization changes are made to a standalone page, these changes are not remembered by WebFOCUS.

Providing Access to Content Items and ibi WebFOCUS Tools

When assembling pages from existing content in WebFOCUS Designer, two preset containers are available that allow you to provide access to content saved to your Repository. These are the Workbench template and the Explorer widget. In addition to running content, the Explorer widget allows users to create content using the same options that are available on the WebFOCUS Hub and Home Page.

The Workbench template provides a resource tree that is linked to another container on the page, using the CSS class **targetContainerForWorkBenchTree**. You can select the Workbench template from the Choose Template dialog when you start assembling a page from existing content. It is not recommended to delete either of the containers that are added as part of the template, but if you right-click the target container and point to **Convert to**, you can change it from a tab container to a basic panel, or to an accordion or carousel container. You can also change the theme used in the page and the styles used by each of the containers. Content that you run in the workbench target container inherits the theme used in the page automatically.

When you run the page, you can run content items from your Repository, listed in the resource tree, in the section of the target container that is currently visible, by double-clicking them or by right-clicking them and clicking **Run**. To run an item in a new section of a tab, accordion, or carousel container, right-click it and click **Run in New Area**. This option is not available if you change the target container to a basic panel. Running items in a new area allows you to see the items that you previously ran by returning to the tab, accordion panel, or carousel slide where you ran them. If the items that you run include parameter filters, you can access filter controls in a modal window by clicking **Show filters** on the page toolbar. Note that if links within content items, such as drilldowns, links generated by Auto Linking, or hyperlinks in a web page, are set to run in a new browser tab or window, they continue to do so when you access them in the workbench output

container. Only content items accessed from the workbench resource tree run in the target container.

Another way to provide access to content in your repository from an assembled page is by using the Explorer widget. You can use the Explorer widget to provide access to the Workspaces area of the Hub or Home Page. This allows anyone accessing the page, or a portal containing the page, to open and run content items and create content, depending on their privileges. To add the Explorer Widget to a page, select the **Container** tab on the sidebar and drag it onto the canvas. When you run a page with the Explorer widget, you can use it to navigate through workspaces, folders, and content items from the Resources tree and Content area, and create content using options in the +Content menu. When an administrator uses the Redirect /ibi_apps to option in the Administration Console to enable a custom welcome page with the Explorer widget, you can provide an enhanced home page combining all of the options available from the Workspaces view with custom content of your choice.

By default, the Workbench template and Explorer widget fill the entire page to provide ample space to display any content items and content creation options. As a best practice, leave the Workbench template containers or Explorer widget as the only items on a page, and add that page to a portal with other pages whose contents you want to display.

Note that if you created pages with the Explorer widget in a prior release, some Hub or Home Page features may not be available when run in Release 8207. Open the page in WebFOCUS Designer, and replace the old Explorer widget with the new one to use the updated version.

Use the Explorer Widget

You can add the Explorer widget to a page assembled from existing content.

Procedure

1. On the WebFOCUS Hub or WebFOCUS Home Page, click the plus menu and then click **Assemble Visualizations**.

   WebFOCUS Designer opens.

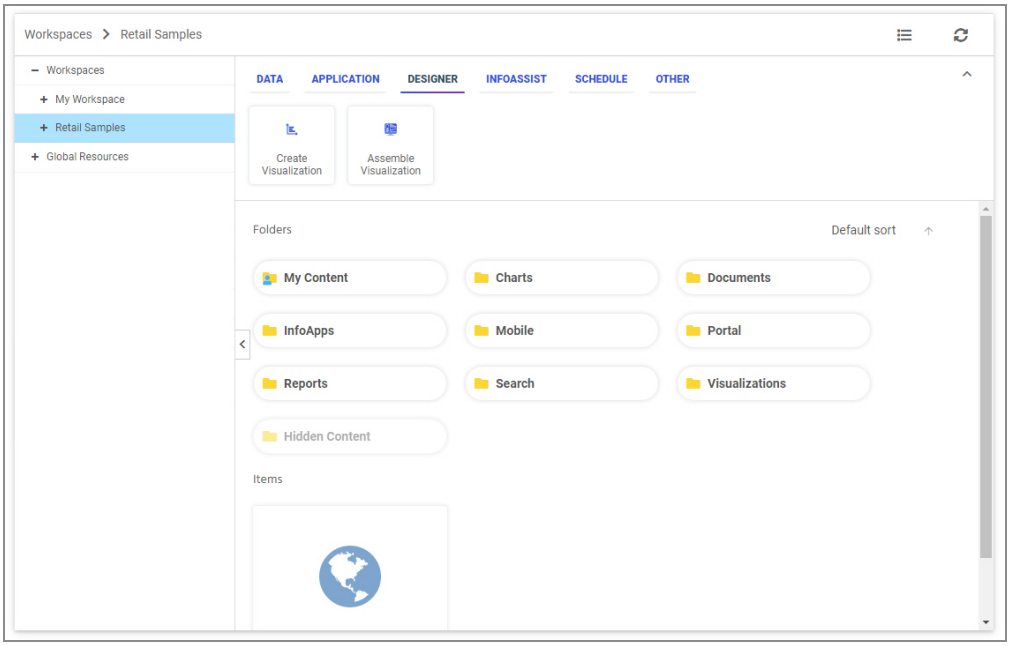
2. In the Choose Template dialog, select the **Blank** template.
3. From the **Container** tab on the sidebar, drag the **Explorer** widget onto the canvas.

The widget displays on the page and incorporates the full display of the Workspaces view of the Hub or Home Page.

4. Optimize the look of the page by removing the page and container titles and toolbars. Select the Explorer widget container and, on the **Settings** tab, clear the **Show title** and **Show toolbar** checkboxes.

   Optionally, select the entire page and clear the **Show page heading** and **Show page toolbar** checkboxes to show only the Explorer widget on the page.

   An example of a completed page is shown in the following image.



5. Save your page.

   The page can now be added to a portal as described in Defining a Portal Structure or used as a standalone item.

Working With Interactions

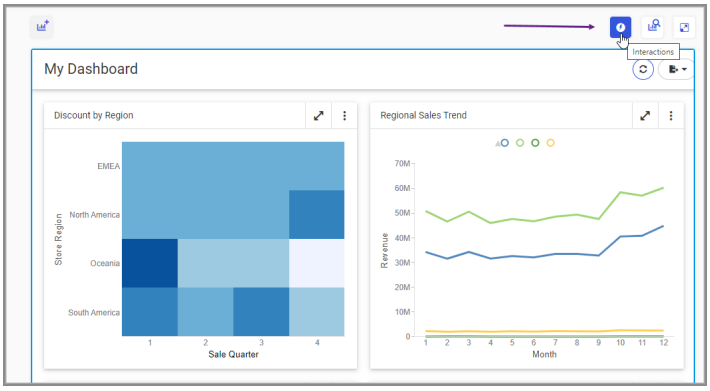
You can use interactions in WebFOCUS Designer to program various objects to perform specific actions on the page. This feature allows you to go beyond simply displaying content on the assembled page and lets you configure an object, such as container, button, or control, to interact with other objects or content. The procedure of creating an interaction is done in the Interactions panel and requires no coding or syntax changes. A single page can have multiple interactions defined.

Examples of possible actions an interaction can perform include but not limited to the following:

- Populating an unused area of the page.
- Replacing content within an existing area of the page.
- Showing or hiding a specified area of the page.
- Running content in a new browser window.
- Running content in the current browser window.
- Executing content to run deferred.
- Showing and hiding objects on the page.

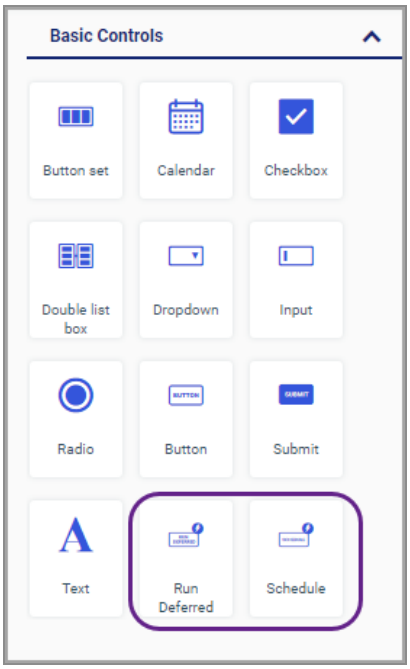
Accessing the Interactions Panel

You can open the Interactions panel in WebFOCUS Designer by clicking the Interactions button above the canvas, as shown in the following image.



Another way to access interactions is through the shortcut menu of most objects that could reside on the canvas. You can right-click a container, filter control, button, or any other control, point to **Interaction** and click **Add**. The Interaction panel opens prompting you to create an event for your interaction scenario.

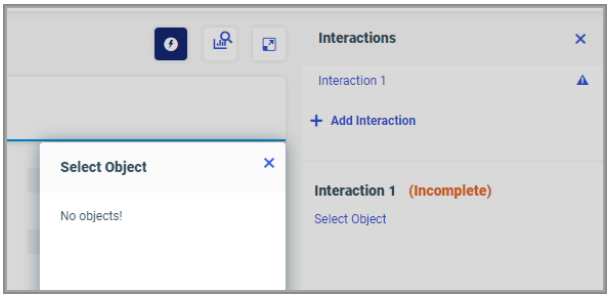
Finally, you can add the Run Deferred and Schedule interactions directly from the Resources panel. On the sidebar, click **Controls** and then drag either **Run Deferred** or **Schedule** onto the canvas. Either of these controls adds an item on the canvas and simultaneously opens the Interactions panel where you can proceed with configuring your interaction. The **Run Deferred** and **Schedule** controls are shown in the following image.



Adding Interactions to a Page

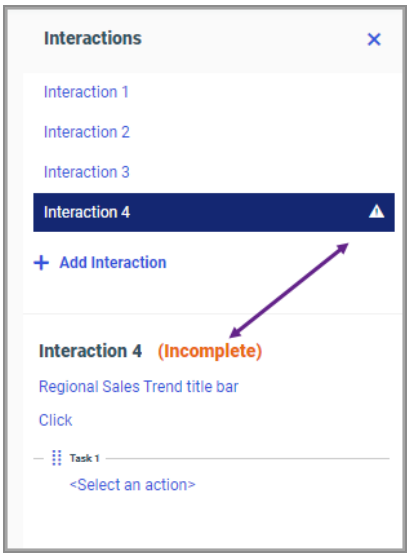
When adding interactions to a page, it is important to keep in mind several basic principles.

1. You can only create interactions when the page canvas is populated by objects. If you open the Interactions panel, and your canvas is empty, the No Objects! warning appears and your interaction is saved as incomplete, as shown in the following image.



2. As you configure your interaction, the user interface guides you by showing available choices in the order in which they must be made. An interaction is marked incomplete until all your selections amount to a valid interaction scenario. An incomplete interaction is identified by the **Incomplete** label next to its name and by

the warning icon in the interactions list, as shown in the following image.



Once you complete all levels of a task, the interaction is deemed complete and the warnings disappear. There must be at least one complete task within an interaction for it to be complete.

3. The following elements cannot be part of an interaction:
    - Panel Group

      Note: You can still add an interaction to a container inside a panel group.

    - Link Tile container
    - Grid container
    - Explorer container
    - Explore Data container
4. You can delete or disable interactions after they have been saved. There is no warning or confirmation message shown when an interaction is being deleted. Use the Undo/Redo buttons if you deleted an interaction by mistake.
5. When executing an interaction on filter controls that have the Global Name option configured, the Global Name value is executed independently of the interaction scenario.

Note: When you load content with parameters into a container on the page, any filters for those parameters are created after existing filters. If the filters were already there, they are reloaded, potentially changing the order of filter controls on the page.

Add Interactions to a Content Item

In this example, we add a simple single-task interaction to a content item.

Procedure

1. On the WebFOCUS Hub, click the Plus menu, then click **Assemble Visualization**.

   WebFOCUS Designer opens and prompts you to select a template.
2. Select a template.
3. Populate the canvas with the content of your choice.
4. Right-click an item, point to **Interaction** and click **Add**.

   The Interactions panel opens, and the Select Event dialog displays with the single option, **Click**, highlighted.
5. Click **OK**.

   The **Task 1** node is added to the interaction tree, and the **Select an action** level appears underneath the Task 1 node.
6. Click **Select an action**.

   The Select Action dialog opens with a list of possible actions, which include:

   - **Run content.** Runs a content item of your choice.
   - **Show object.** Displays a previously hidden object on the canvas.
   - **Hide object.** Hides an object from the canvas.
   - **Run deferred.** Submits a report procedure or a schedule for deferred execution.
   - **Schedule content.** Opens the ReportCaster where you can configure scheduled

distribution of the specified content.

In this example, we run another item in a page overlay.

7. Keep the **Run content** selected and click **OK**.

   The Select content level displays.

8. Click **Select content**.

   The Select Content dialog opens displaying the Resources tree.

9. Navigate to the content item that you wish to run and click **OK**.

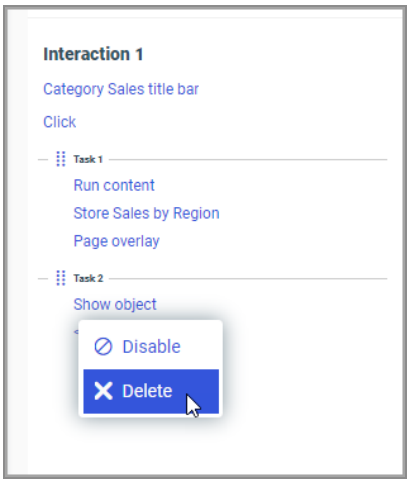
   The **Select a target** level is added to the task.

10. Click **Select a target**.

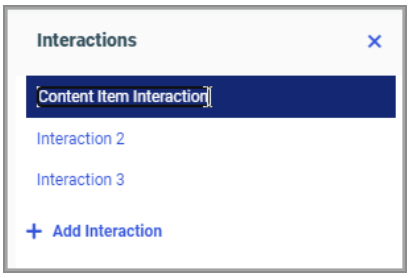
    The Select Target dialog opens where you can choose the location for running your content. The options include: Container, Page overlay, New window, and Same window.

11. Click **Page overlay**, and then click **OK**.

    Your interaction is complete. Notice that it no longer displays as incomplete, and there are no more levels added to the interaction tree. Optionally, you can add more tasks to the interaction by clicking **Add Task**. If you do that, the **Task 2** node is added to the interaction tree. To disable or delete a task, right-click anywhere within the task node and select an option, as shown in the following image.



12. Optionally, change the name of your interaction by double-clicking it in the list and typing a new name, as shown in the following image.



13. Finally, click the preview button to test the behavior.

    The page runs in a new window.

14. Click the content item that you configured.

    The target item runs in the page overlay, as configured.

15. Save your page.

Add Interactions to a Control

In this example, we add multi-task interactions to a button set.

Procedure

1. Open WebFOCUS Designer in the Assembled mode.
2. Choose a page template.

   In this example, we are choosing the Blank page template.

3. On the sidebar, click **Controls**, then drag the **Button** control onto the canvas.

   The grid container with a single button is added to your page.

4. Drag another button to the next cell of the grid.
5. Multi-select other cells of the grid by holding the Shift key, right-click one of them, and then click **Delete cell**.

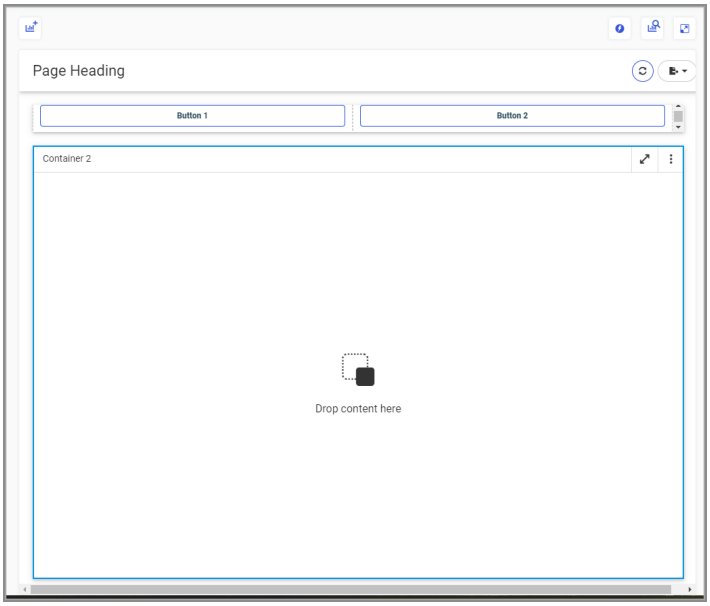
   You are left with the grid container with two buttons.

6. Optionally, stretch the container to fill the width of the page for a more symmetrical display.

   You can also remove the container title and toolbar by clicking the container and clearing the **Show title** and **Enable toolbar** checkmarks on the Settings panel.

7. On the sidebar, click **Containers**, and then drag the basic container onto the canvas underneath the buttons.
8. Optionally stretch your container to achieve symmetry.

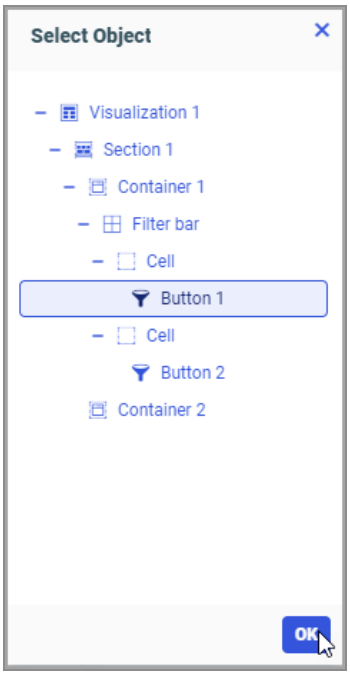
   An example of what your display should look like is shown in the following image.



9. Click the **Interactions** button above the canvas.

   The Interactions panel opens.
10. Click **Add Interaction**.

    The Select Object dialog opens. We start by programming the first button to display a container and to run content.
11. Click **Button 1** and then click **OK**, as shown in the following image.



Note: Notice that when you click an element in the Select Object dialog, the same element gets selected on the canvas for easy navigation.

12. Click **Select Event**.

    The Select Event dialog opens.

13. Leave **Click** selected and click **OK**.

    The Task 1 node is added to the interaction.

14. Click **Select an action**.

    The Select Action dialog opens.

15. Click **Show object** and then click **OK**.

16. Click **Select an object**.

    The Select Object dialog opens.

17. Click **Container 2** and then click **OK**.

    The Task 1 node is complete.

18. In the same interaction, click **Add Task**.

The Select Action dialog opens.

19. Leave **Run content** selected and click **OK**.

    The Select Content dialog opens displaying the Resources tree.

20. Navigate to the content item that you wish to run and click **OK**.

    The **Select a target** level is added to the task.

21. Click **Select a target**.

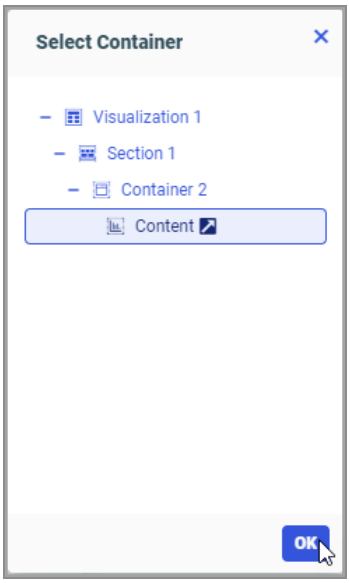
    The Select Target dialog opens.

22. Leave **Container** selected and click **OK**.

23. Click **Container content area name**.

    The Select Container dialog opens.

24. Click **Content** and click **OK**, as shown in the following image.



    The interaction for the first button is complete. Now we program the second button to hide content.

25. In the Interactions panel, click **Add Interaction**.

26. In the Select Object dialog, click **Button 2** and then click **OK**.

27. Click **Select Event**, and, in the Select Event dialog, leave **Click** selected and click **OK**.

28. Click **Select an action**.

29. In the Select Action dialog, click **Hide object** and click **OK**.
30. Click **Select an object**.
31. In the Select Object dialog, click **Container 2** and then click **OK**.

    The interaction for the second button is complete.
32. Optionally, rename the buttons to convey the actions they now perform by double-clicking them on the canvas and typing new names.

    In our example we are renaming Button 1 to Show Content and Button 2 to Hide Content.
33. Optionally, rename the interactions to match the new names of your buttons for easy identification.

    An example of the completed interactions for a button set is shown in the following image.

34. Click the preview button to check the behavior.

    The page runs in the new browser window. Clicking the **Show Content** button runs the content, and clicking the **Hide Content** button hides the container. Finally, clicking the **Show Content** again displays the hidden container and runs the content inside it.

    This scenario or its variations can be used as part of a larger structure with multiple interactions on a page.

Add Interactions to a Filter Control

In this example, we add an interaction to a filter control.

Procedure

1. Open WebFOCUS Designer in an Assembled mode and select a page template.
2. Add parameterized content to the canvas.
3. On the sidebar, click **Filters**, and add one or more filters to the page.

   Filters are added to the filter toolbar. We program a filter to schedule content when used to change a selection.
4. Right-click a filter control to which you want to add an interaction, point to **Interaction**, and then click **Add**.

   The Interactions panel opens, and the Select Event dialog appears.
5. Leave the **Selection change** selected and click **OK**.

   The Task 1 node is added to the interaction.
6. Click **Select an action**.
7. In the Select Action dialog, click **Schedule content** and click **OK**.
8. Click **Select content**.

   The Select Content dialog opens displaying the Resources tree.
9. Navigate to the content item that you wish to schedule and click **OK**.

   The **Select a mode** level is added to the task.
10. Click **Select a mode**.

    The Select Schedule mode dialog opens where you can choose the mode in which your scheduled content is shared. The options include: All, Email Library FTP, Email, FTP, Printer, Report Library, and Repository.
11. Click **Email** and then click **OK**.
12. Click **Select a target**.

    The Select Target dialog opens where you can choose the location for the ReportCaster to run. The options include: Page overlay, New window, and Same window.
13. Click **New Window** and click **OK**.

    Your interaction is complete.
14. Click the preview button to check the behavior.

The page runs in the new browser window.

15. Make a selection in the filter control for which you configured an interaction.

    ReportCaster opens in the new browser window where you can configure the options for scheduling an email. To learn more about scheduling in WebFOCUS, see the *ReportCaster* technical content.

Add Interactions to Multi-Content Containers

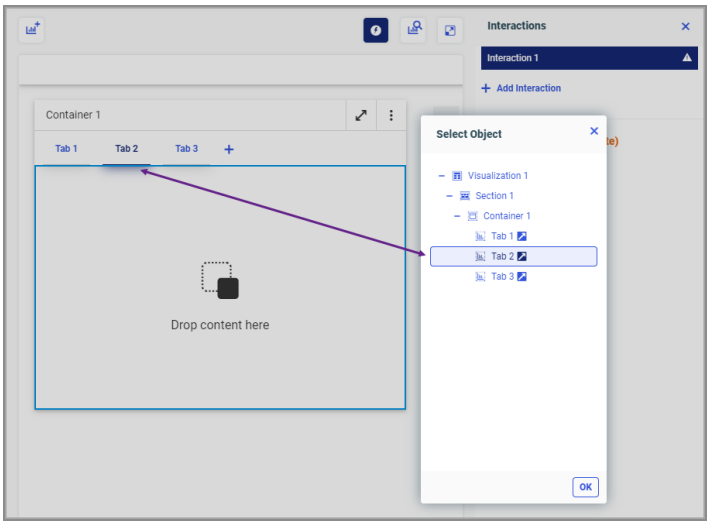
You can add interactions to the multi-content containers as a whole as well as individual content items within the container.

Procedure

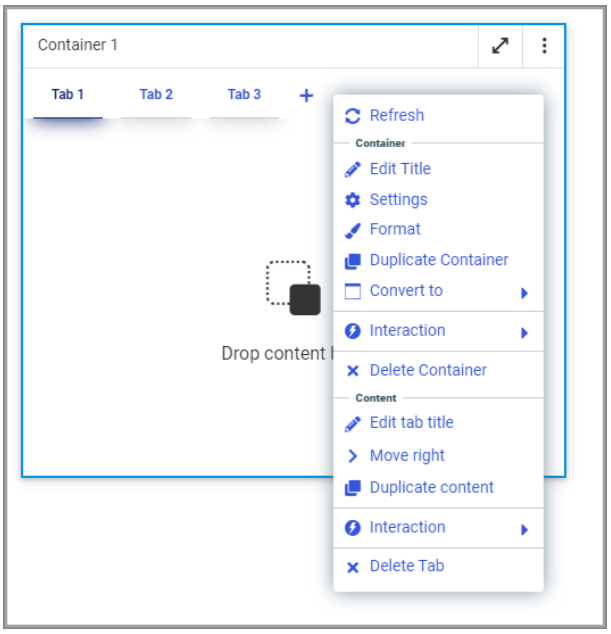
1. Open WebFOCUS Designer in the Assembled mode and select a page template.
2. On the sidebar, click **Containers** and drag a multi-content container, such as **Tab**, **Carousel**, or **Accordion**, to the canvas.
3. Depending on your intended interaction scenario, add content to your multi-content container, or simply add tabs, slides, or areas.
4. Click the **Interactions** button above the canvas.

   The Interactions panel opens.
5. Click **Add Interaction**.

   The Select Object dialog opens. Notice that you can select an entire container or one of its sub-elements. The following image shows how to target a specific tab of the tabbed container for an interaction.



Another way to see the distinction between these elements is to right-click a multi-content container. The shortcut menu is divided into two sections, Container and Content, each featuring the Interaction option, as shown in the following image.



6. Once you select an object, you can proceed with completing your interaction, as described in Add Interactions to a Content Item.

Adding Conditions to Interactions

Interactions created with filter controls and certain unbound controls can be configured to use conditions. Whenever an interaction event is set to **Selection Change**, you can add conditions to the tasks within your interaction. There could be as many conditions as there are tasks inside an interaction, each set to perform a different action whenever a different value is selected. This adds a new layer of flexibility to your page.

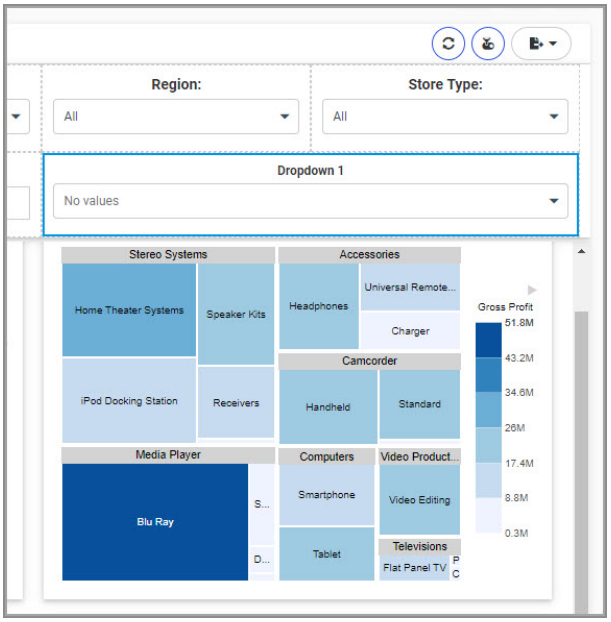
Add Conditions to an Interaction

In this example, we add conditions to an interaction for a static unbound control.

Procedure

1. Open WebFOCUS Designer in an Assembled mode and select a page template.
2. Populate your page with elements of your choice.
3. On the sidebar, click **Controls** and drag the **Dropdown** control to your page.

   In this example, we placed the unbound dropdown control inside the unused cell of the filter toolbar, as shown in the following image.



4. Click the control inside the cell, and, on the Settings panel, in the Control Source

section, click the Edit button.

The Edit Source dialog opens.

5. Configure the static list for the control.

   In this example, we add three items to represent three charts that the interaction run.

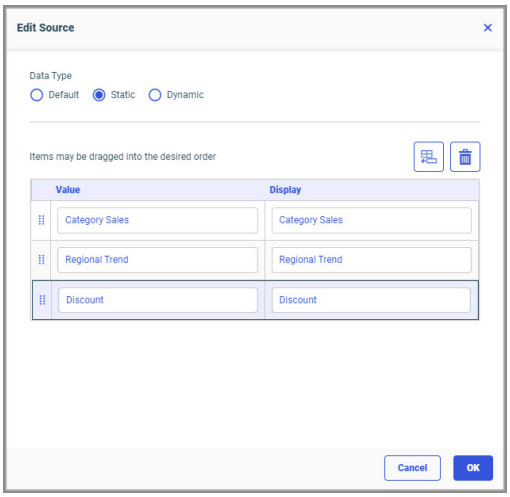
   a. In the Data Type section, select **Static**.

   b. Click the Add row button three times.

   c. Populate the three **Value** fields with the following entries: Category Sales, Regional Trend, and Discount.

   d. Repeat the same entries for the **Display** fields.

   An example of the populated Edit Source dialog is shown in the following image.



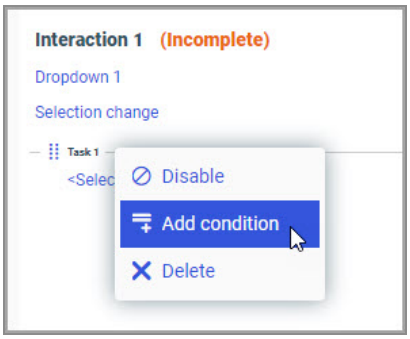
6. Click **OK**.

7. Right-click the dropdown control, point to **Interaction** and click **Add**.

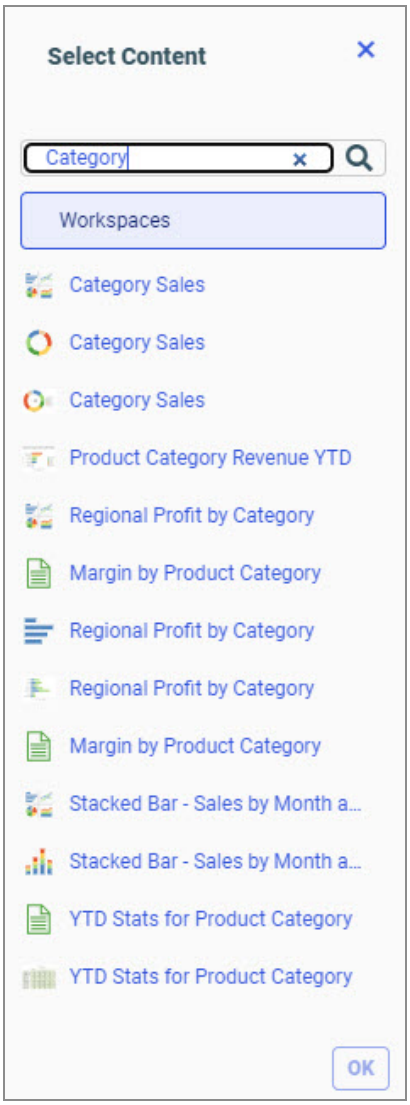
8. Leave the **Selection change** selected and click **OK**.

   The Task 1 node is added to the interaction.

9. Right-click the Task 1 node and click **Add condition**, as shown in the following image.



10. In the Condition dialog, type the first value from the dropdown list, *Category Sales*, and click **OK**.
11. Click **Select an action**.
12. In the Select Action dialog, leave the **Run content** option selected and click **OK**.
13. Click **Select Content**.
14. In the Select Content dialog, navigate to the Category Sales chart inside the Retail Samples workspace, or use the Search feature to locate the item, as shown in the following image, and click **OK**.



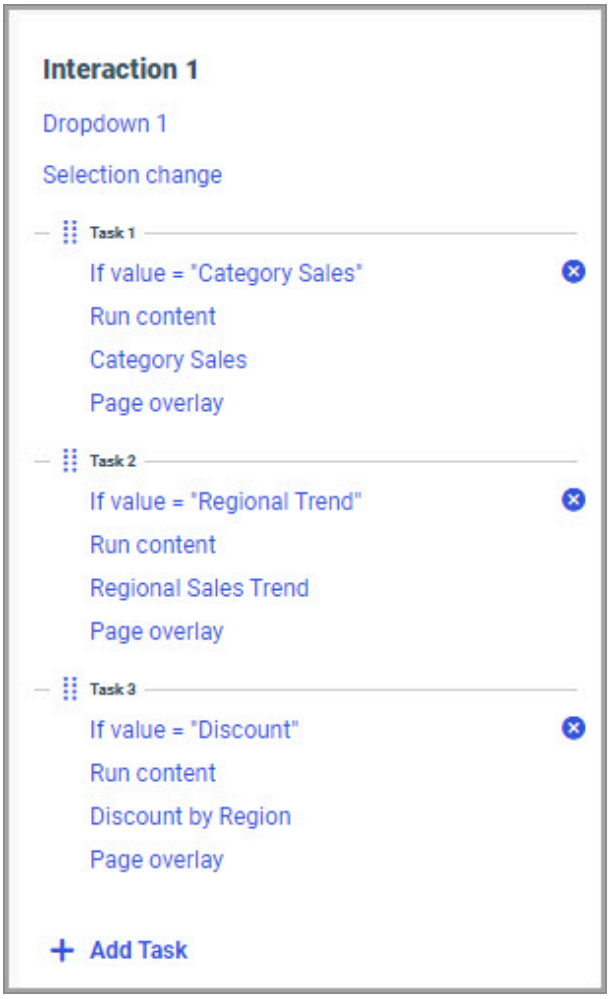
15. Click **Select a target**.
16. In the Select Target dialog, click **Page overlay** and click **OK**.

    The first of the three tasks is complete.
17. Click **Add Task**.

    The Select Action dialog opens.
18. Close the Select Action dialog without making a selection.
19. Right-click the Task 2 node and click **Add condition**.
20. Repeat the steps that you performed configuring the Task 1 node, only this time,

condition the Regional Trend value to run the Regional Sales Trend chart.

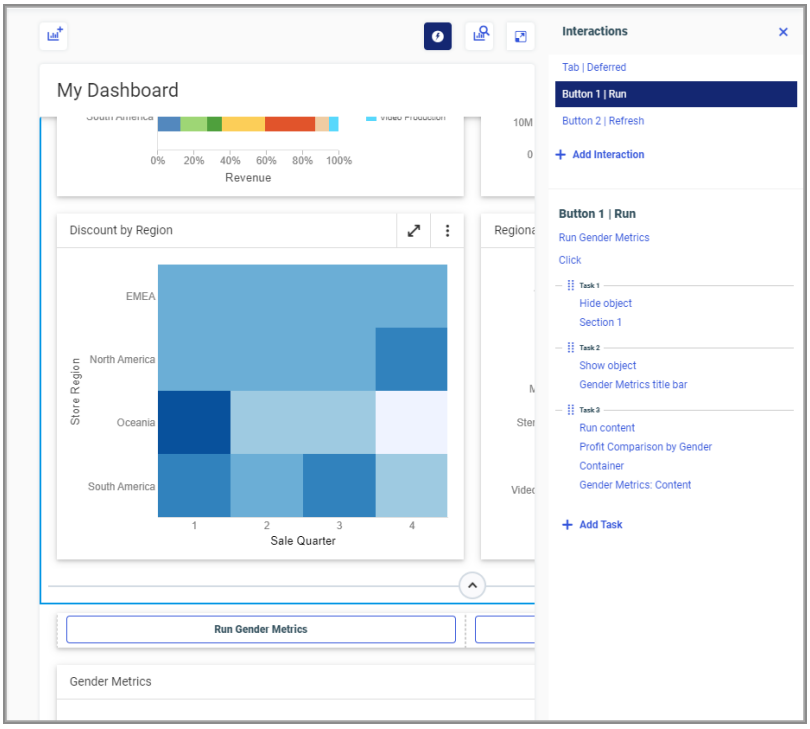
21. Add the Task 3 and condition the Discount value to run the Discount by Region chart.
    An example of a completed interaction is shown in the following image.



22. Optionally, rename your interaction to reflect the interaction scenario.
23. Optionally, rename your dropdown control to reflect the interaction scenario.
24. Click the preview button to check the behavior.
    The page runs in the new browser window.
25. Select different values in the dropdown list.
    The charts that correspond to the values run in the page overlay, as configured.

Editing Interactions

There could be a large number of interactions on any given page, which is why the best practice is to give each interaction a distinct name for easy editing. To edit an interaction, click the Interactions button above the canvas and, in the Interactions panel, select an interaction from the list. All tasks that belong to this interaction display below the list, as shown in the following image.



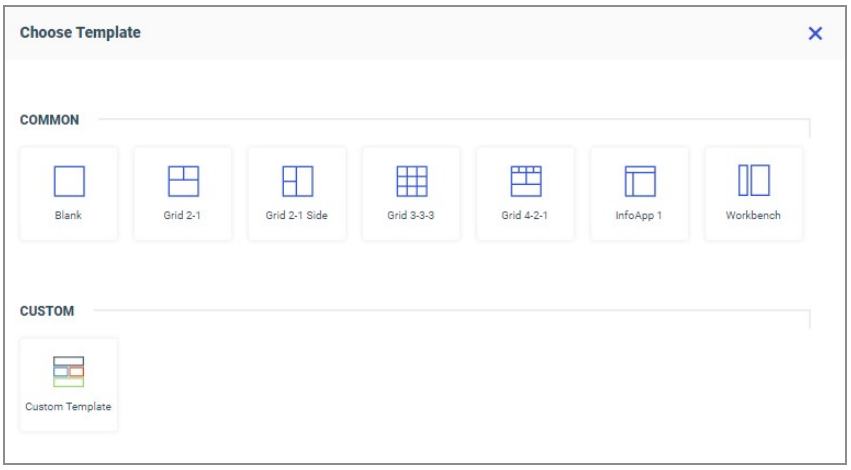
You can click any node to edit it by performing the prompted steps as described in the procedures above.

You can also add, delete, or disable tasks. If you disable a task, it is removed from the queue for execution while remaining in the interaction tree. The Disabled label and icon are added to the task, as shown in the following image.

Finally, you can right-click an interaction in the list to access its shortcut menu options, which include: Duplicate, Rename, Disable, and Delete.

Creating Custom Templates

When you assemble a page from existing content in WebFOCUS Designer, the first step is to select a page template. WebFOCUS Designer provides a selection of preset templates, as shown in the following image.



Select the Blank template to start with a blank canvas to which you can add, reposition, and resize containers on your own. The Grid 2-1, Grid 2-1 Side, Grid 3-3-3, and Grid 4-2-1 templates provide a set of containers that are prearranged on the page. The InfoApp 1 template provides a collapsible filter panel and movable filter grid to which you can add filter controls, which are generated when you add parameterized content to the page. The Workbench template provides a resource tree that you can use to navigate to content items in your repository, which you can then run in the target container on the right.

In addition to the default templates that WebFOCUS Designer offers, you can create custom templates that reflect your unique layout. They are a great way to add structural variation or highly customized layouts to your page. Custom templates are also useful for organizations that have a set style for all of their pages. You must have administrator access to WebFOCUS to deploy custom templates.

Create a Custom Template for WebFOCUS Designer Pages

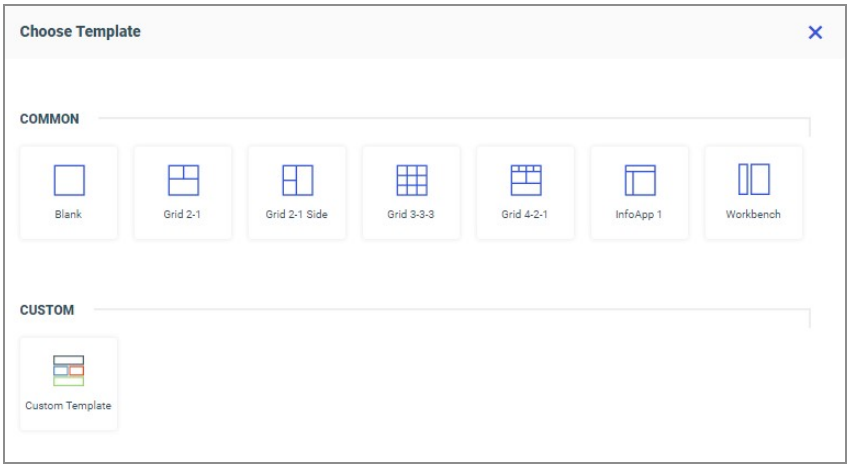
Procedure

1. Create a new page. On the WebFOCUS Hub or the WebFOCUS Home Page, click the plus button.
2. Click **Assemble Visualizations**.

   WebFOCUS Designer opens, and you are prompted to select a template.
3. Select one of the default templates that you want to use as the starting point for your custom template, to click **Blank** to build a new template from scratch.
4. Modify the page layout to reflect your preferences. For example, insert new sections, customize the sizing of each row in the template.
5. Save your new page to any folder and exit WebFOCUS Designer.
6. Optionally, apply a custom thumbnail to your template page. If you do not assign a custom thumbnail, the default thumbnail WebFOCUS associates with pages display.
7. In the Workspace area of the Hub or Home Page, expand the **Global Resources** folder, and then expand the **Page Templates** folder.

   Two folders display inside the Page Templates folder: Standard and Custom.
8. Copy your new template page from its initial directory and paste it inside the **Custom** folder.

   The next time you open WebFOCUS Designer using the Assemble Visualizations option, your custom template appears, as shown in the following image.



   Once a custom template is created, you can configure access to it by using security rules to hide it from specific groups of users. To learn more about working with security rules, see the *ibi™ WebFOCUS® Security and Administration* manual.

Passing Parameter Values to a Page

When a page includes content with dynamic parameter filters, you can pass parameter values to it from external content to set the filter values when the page initially loads. For example, you can create a chart or report with drill-down links that points to the page, and configure the drilldowns in such a way that the value the user clicks in the chart or report is used as a filter value in the page. This allows users to navigate between content items and determine the scope of the information that they want to see.

If the page is the target of a link tile in another page, parameter values in the source page are passed to the target page automatically if the Attach all parameters option is enabled and the same parameter filters are present. This allows users to see the same set of values in the target page without having to set filter values again.

Parameter values can also be passed to a page using parameter name-value pairs in the run-time URL. The run-time URL uses the following format:

```
http[s]://hostname:port/context_root/run/path_to_item[?&variable_
name1=variable_value1&variable_name2=variable_value2]
```

where:

hostname

Is the name of the system where WebFOCUS is installed.

port

Is the port number used by WebFOCUS.

context_root

Is the context root used for your WebFOCUS application. For example, ibi_apps.

path_to_item

Is the IBFS path of a page in your WebFOCUS repository. You can find the path of a page by right-clicking it on the WebFOCUS Hub or WebFOCUS Home Page and clicking **Properties**. The file path is listed as the Path property.

Slashes (/) between folder names should be retained literally instead of encoded in the URL, and the colon (:) should be removed after *IBFS*. For example:

```
http://localhost:8080/ibi_apps/run/IBFS/WFC/Repository/My_
Workspace/~user/example_page
```

&variable_name1=variable_value1&variable_name2=variable_value2

Are one or more parameter name-value pairs. To pass multiple values to a multiselect parameter in the page, separately list the same parameter name multiple times with each distinct value. For example, the URL,

```
http://localhost:8080/ibi_apps/run/IBFS/WFC/Repository/My_
Workspace/~user/example_page?&TIME_YEAR=2018&TIME_YEAR=2019
```

passes 2018 and 2019 to the &TIME_YEAR parameter.

Note: If multiple filters in a page use the same amper variable name, for example, if they come from different data sources, the value or values defined in the URL are passed to each of these filters.

Pass Parameter Values to a Page Using a URL Drilldown

You can drill down from a chart or report procedure to a page created in WebFOCUS Designer. Drill-down parameters can be passed to the page to apply their values to any page filters.

Procedure

1. Create and save a page that includes prompted filters. These filters can be created by adding parameterized external content to an assembled page and clicking **Add all filters to page** in the Filters tab of the sidebar, or can be created in a page with new content by dragging a field to the Filter toolbar.

   The filters in this page is populated with values passed from a drill-down report.

   For information on creating a page, see Creating Pages.

2. Create a new report in InfoAssist.

On the Hub or Home Page, in the Workspaces view, click the +Content button, point to**InfoAssist**, and click **Report** or **Chart**.

InfoAssist opens and you are prompted to select a data source.

3. Select the same data source that was used to filter the page, and click **Open**.

   The report or chart canvas appears.

4. Create content that is sorted by the same fields that are used as filters in the page. For example, if the page is filtered by Customer Business Region and Sale Year, create a report with those fields in the row bucket. Add other measures and dimensions to your content based on your needs and preferences.

5. Select an element of the chart or report to which to add drill-down links.

   If you are passing multiple parameter values through the drilldown, selecting a section of the chart or report that represents multiple sort values may help clarify to the user which values is passed.

   For example, in the report shown in the following image, the Sale Year field is the secondary sort field while Customer Business Region is the primary sort field, so each row in the Sale Year column represents a sale year and a business region.

Customer Business Region	Sale Year	Quantity Sold	Revenue
EMEA	2014	115,367	$32,608,030.34
	2015	132,574	$39,630,841.14
	2016	193,158	$57,591,488.69
	2017	255,468	$76,647,406.85
	2018	464,797	$140,440,022.62
	2019	699,498	$215,398,344.26
North America	2014	46,386	$13,060,621.95
	2015	61,246	$18,287,269.34
	2016	92,483	$27,473,407.52
	2017	147,038	$43,907,888.55
	2018	426,176	$128,662,736.78
	2019	694,386	$212,755,358.69
Oceania	2015	56	$14,736.30
	2016	165	$48,743.31
	2017	374	$104,323.54
	2018	1,321	$424,709.91
	2019	6,481	$1,970,040.66

In this case, adding the drill-down links to the Sale Year column would allow you to choose from all of the available Customer Business Region and Sale Year values, whereas adding the links to the Customer Business Region column would only allow you to pass parameter values for the first sale year in each business region group. As an alternative to creating drilldowns on the lower level sort field, you could ensure that all parameter values are passed from a report by using repeating sort values. On the **Format** tab, in the **Features** group, click **Repeat Sort Value**.

6. On the **Field** tab, in the **Links** group, click **Drill Down**.

   The Drill Down dialog opens.

7. Change the drilldown type to a URL drilldown by selecting the **Web Page** radio button.

8. In the URL text box, type the run-time URL for the target page, without the parameters, using the format described above.

   The URL format should resemble the following:

```
http[s]://hostname:port/context_root/run/path_to_page
```

You can get the path to the page by right-clicking it on the Hub or Home Page and clicking **Properties**. It displays as the Path property. When you add it to the run-time URL for the drilldown, remember to remove the colon (:) after *IBFS*.

9. In the Description text box, type the name of the drilldown. This name displays in the tooltip from your content.
10. In the Target dropdown menu, select the location where the target page should run. It can be in a new tab, the same window where the report was run, or a user-specified location.
11. In the Parameters section, click **Add Parameter** to create a parameter to pass to each filter on the target page that you wish to populate.
    a. In the Name text box, type the name of the parameter. Typically, this matches the field name. You can check the parameter names used in an assembled page by clicking the **Info** button.
    b. From the Type menu, choose whether the value to pass should be the field value associated with the user drill-down link selection, or a constant value.
    c. If you selected **Field**, use the Value menu to select a field from your content. If you selected **Constant**, type a constant value to pass to the page.
12. Repeat step 11 for all parameters whose values you want to pass to the target page, then click **OK** to create the drilldown.

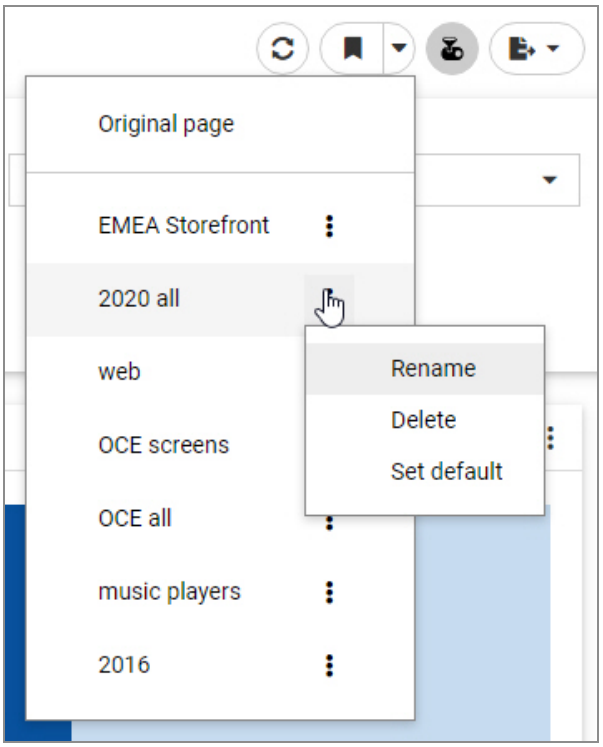
    In a report, drill-down links are added for each value of the field where the drilldown was created. In a chart, you can access drill-down links in a tooltip at run-time.
13. Run the chart or report.
14. At run-time, drill down to the target page.
    - If you created a chart, point to a section of the chart and click the drill-down link in the tooltip.
    - If you created a report, click a drill-down link. If that field of the report has multiple drilldowns associated with it, select the drilldown that you just created.
15. The page opens in a new browser tab or window. Notice that the value or values

represented by your selection in the parent content item are applied as filter values in the page.

Bookmarking Control Selections in a Page

Bookmarking allows users to save filter control selections and other run-time content customizations that they make in a page so that they can easily reapply them when they run the page again later. This is especially useful when there are many filter controls on a page that a user may want to apply each time they access it. Bookmarks are personal to each user and can easily be created and deleted as needed.

Bookmarking is enabled automatically once the page has been saved, and is available in authored pages created with new content and in assembled pages built from existing content. To add a bookmark, make some filter selections when running a page, and then click the **Bookmarks** button , which appears on the page toolbar at run time. You are prompted to type a name for the bookmark. Click **OK** to apply it. A maximum of 46 characters display for each bookmark name. Once applied, the bookmark is added to the list, which you can open by clicking the dropdown menu arrow next to the Bookmarks button. Select a bookmark from the list to refresh the page and apply the associated set of filter values. The bookmark list also includes the **Original page** option, which reloads the page with the default filter values selected. From the bookmark list, you can also use the menu for each existing bookmark to rename or delete the bookmark, or make it your personal default set of filter values when you load the page, as shown in the following image.



Each user can create a maximum of ten personal bookmarks for a page. If you reach this limit on a page, delete an existing bookmark to add a new one. The Original page bookmark is always available and cannot be deleted.

Bookmarks also save certain user customizations made in the page. For example, if you use on-chart filtering in an authored page at run-time to create a new filter, you can create a bookmark to save it. In authored pages, you can also change the filter condition from included values to excluded values and change the aggregation operation, and in assembled pages, you can change the content that displays in unlocked containers. All of these changes are saved when you create a bookmark.

Exporting a Page as a PDF or Image

You can instantly download a snapshot of your page as a PDF document or .png image using the Export to file menu on the page toolbar. This allows you and anyone running the page to quickly capture its current state, with filter selections applied, in a format that can be easily reused, distributed, added to PowerPoint presentations, and more. The ability to capture a snapshot at design time allows you to quickly capture multiple visual representations of your data as you develop your content, while the ability to capture a snapshot at run time allows you or a user running the page to save images of it with the currently selected filter values.

When designing or running the page, the Export to file menu appears on the page toolbar by default. Click it to display options to download a snapshot of the page as a PDF or image, as shown in the following image.

The .pdf or .png file is downloaded using your browser. The file can be opened immediately and saved to distribute and reuse later.

The snapshot that is produced is a run-time representation of your content with styling and filtering, including on-chart filtering, applied. Since the exported file is an image, it is not interactive, so tooltips, scrolling, and other behavior are unavailable.

You can change the export options that are visible on the page toolbar. Select the entire page, then open the Settings tab. The **Show export** option and **PDF** and **Image** options are selected by default. Clear the **PDF** or **Image** checkbox to change the format available when exporting the page. If only one format is enabled, the Export to file option on the page toolbar changes from a menu to a button. You can also clear the **Show export** checkbox to remove the export option from the page.

The following considerations may affect page export behavior:

- If a container is maximized when you export the page, then only that container displays in the exported image or PDF file.
- Content in containers on a page may not appear correctly when exported from Internet Explorer.
- When exporting a page from Microsoft Edge, ensure that the containers on the page are large enough to display their contents without scroll bars. Otherwise, the content may overlap.
- XML files and procedures with an XML output format added to a page produce an error when exporting.
- Certain chart extensions, for example, the Sparkline KPI, KPI with Sparkline Large, and KPI Table extensions, may not render correctly in an exported page.
- If a container on a page contains a URL that does not have the same protocol, host name, and port number as that of the environment from which the page is run, the export cannot be performed due to same-origin policy restrictions.

- If a page has too many rows to fit onto a single page of a PDF document, then containers and their contents may be split by page breaks in the exported file.
- PDF documents in containers on a page, including charts and reports with a PDF output format, do not display when the page is exported.

Building Portal Applications

The new generation WebFOCUS Portal is an analytical content management system that provides a flexible and interactive environment for both authors and consumers of data analytics. It allows users to access and share content, customize their portal experience, collaborate, and build sophisticated structures for data storytelling.

The key benefits of the portal are:

- Multi-level page navigation, which is especially useful in organizing large numbers of pages.
- Flexible page layout options for dashboards and InfoApps™.
- Mobile-friendly design that ensures responsive behavior on any device and with any type of content.
- Built-in page filter that is automatically enabled whenever users display parameterized content on a personal page.
- Modern styling featuring clean and streamlined UI and customizable themes.

Creating Portals

You can create a portal structure in your repository, which you can populate by adding pages. You can also configure the option for users to create personal pages.

Create a Portal

1. From the + menu option, select **Create Portal**.
2. Populate the following fields:
    a. **Title**: The title of the portal.
    b. **Name**: The name of the portal. This field is populated automatically to match

the title field. You can edit the field with a custom name, if you want.

c. **Alias**: Creates an alias for your portal.

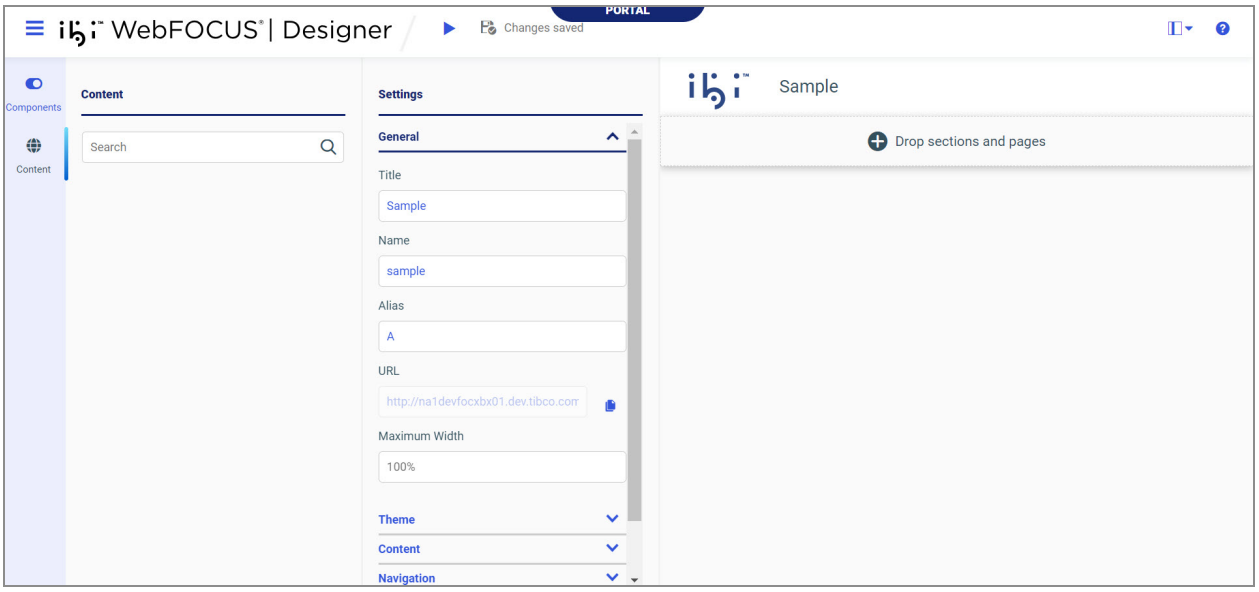
d. **Location**: The filepath where the portal is saved. It is populated automatically. You can edit the filepath if you want.

3. Click **Create** to create the portal.

Setting up a Portal

You can set up the layout of the portal and also add content to the portal you have created in the portal window. The Portal window has the following tabs:

- **Components**: Allows you to set up the layout of the portal.
- **Content**: Allows you to add content to the portal.



Follow the below steps to set up the layout of the portal:

1. Under **Settings**, Select **General** option.

   a. In the General option, you can change the **Title**, **Name**, **Alias**, **Maximum Width**, and copy the **URL**.

2. Select **Theme** option.

   a. Select the theme for the portal from the dropdown list. By default it is set as

Designer 2018. There are more options such as **Light**, **Midnight**, **Vivid**, or you can use a custom theme.

3. Select **Content**, then enable the Live preview option if you want to use **Live preview** of your content.
4. Select the **Navigation** option, then set up the position of the navigation panel using the three options:
    a. **Side Navigation**
    b. **Top Navigation**
    c. **Top & Side Navigation**
5. Select the **Banner** option, then follow the below steps:
    a. Select the **Enable banner** checkbox if you want to add a banner to your portal.
    b. Select the **Show banner title** checkbox to display the banner title in your portal.
    c. Select the **Show top navigation in banner** to display the navigation bar on the banner.
    d. Select the **Show logo** option to display the logo. You can either display a custom or a clickable logo.
        i. Select **Custom logo** to set a custom logo. Choose the logo from the repository and add a tooltip in the **Custom logo tooltip** field.
        ii. Select **Clickable logo** to set a clickable logo. Set up the logo to redirect to either a URL specified by you or to the portal homepage.
6. Select **Enable user menu**, displays a user menu inside your portal and allows you to select which options display in this menu.

    The following user menu options are available: **Administration**, **Tools**, **Preferences**, **Help**, **Remove my customizations**, **Change Password**, and **Sign Out**.

To add content, select the **Content** tab then drag the content to the canvas.

All changes made to the portal are automatically saved.

You can also use the Components tab to add an empty page, which you can then edit to populate with content. You can also add sections to which you can add multiple pages in order to organize your portal.

Defining a Portal Structure

Each portal is a conglomerate of various parts that you can use to make your portal a comprehensive representation of your data narrative. For example, you can add pages to your portal to showcase data. You can create sections and sub-sections to better organize your content. The structure of a portal can be as simple or as complex as required by your specific purpose. There are three content types that you can add to a portal:

- Folder
- Page
- Shortcut to a page

You can use these elements to define a portal structure by building a simple folder hierarchy.

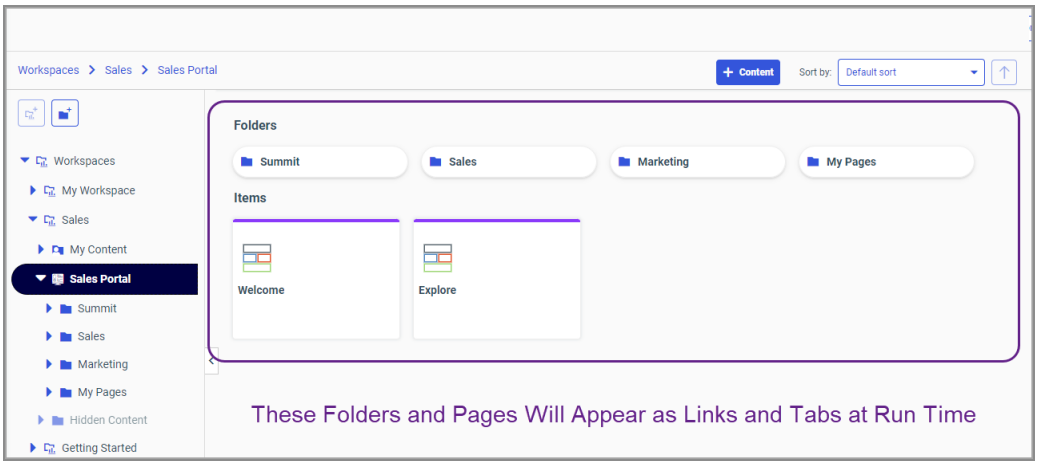
Define a Portal Structure Using Content

Procedure

1. Create a portal as described in Creating Portals.
2. In the Workspaces area, in the Resources tree, select the portal you want to modify.
3. Using the +Content menu and the plus button, add content to create a portal navigation layout of your choice.

   You can create pages and folders to populate your portal. You can also use the Shortcut feature to link existing standalone pages to your portal.

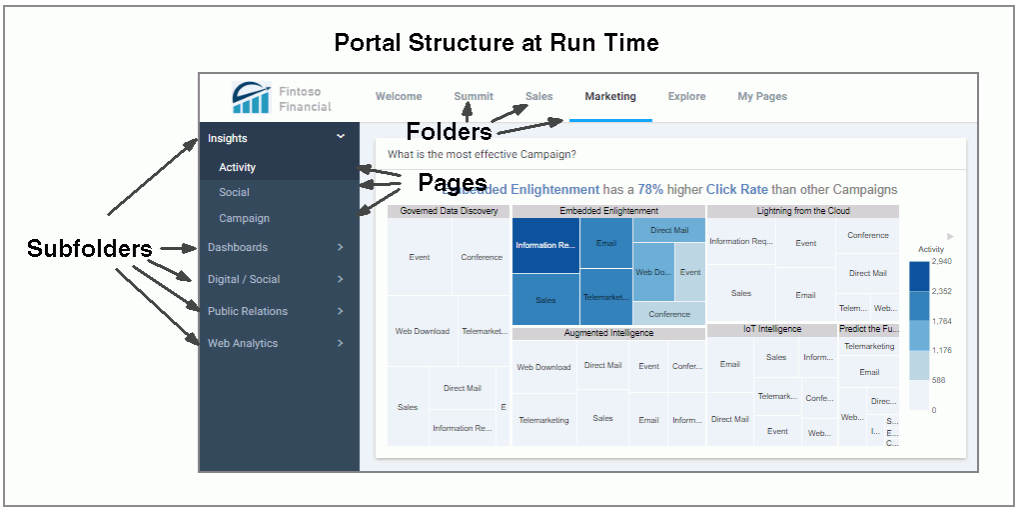
   The images below show an example of the initial view of the portal that consists of pages and folders.



When tabs or links overflow beyond the width of a page, an ellipsis icon displays allowing you to access the entire list of tabs or links, as shown in the following image.

4. Optionally, add more folders, subfolders, and pages to your portal.

   The image below shows an example of how folders, subfolders, and pages make up the structure of a portal.



5. Once your portal is complete, you can publish it and make it available to other users.

Use Shortcuts to Add Pages to a Portal

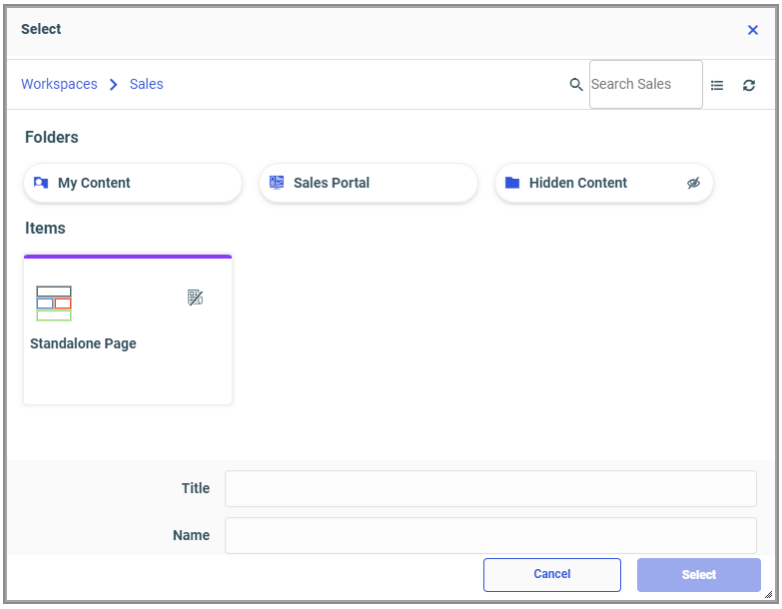
Procedure

1. In the Resources tree, select a portal you want to modify.
2. Navigate to the level inside the portal where you want to add a page.
3. In the +Content menu, point to **Other**, and click **Shortcut**.

The Select dialog opens.

4. Using the breadcrumb trail, navigate to the page you want to add to your portal and click it.

   Notice that the Title and Name fields are inactive, as shown in the following image.



5. Click **Select**.

   The page displays inside the portal structure with the Shortcut icon added to its page icon.

6. To change the page title, right-click the page, click **Properties**, edit the Title field in the Properties panel, and then click **Save**.

   The new page title displays.

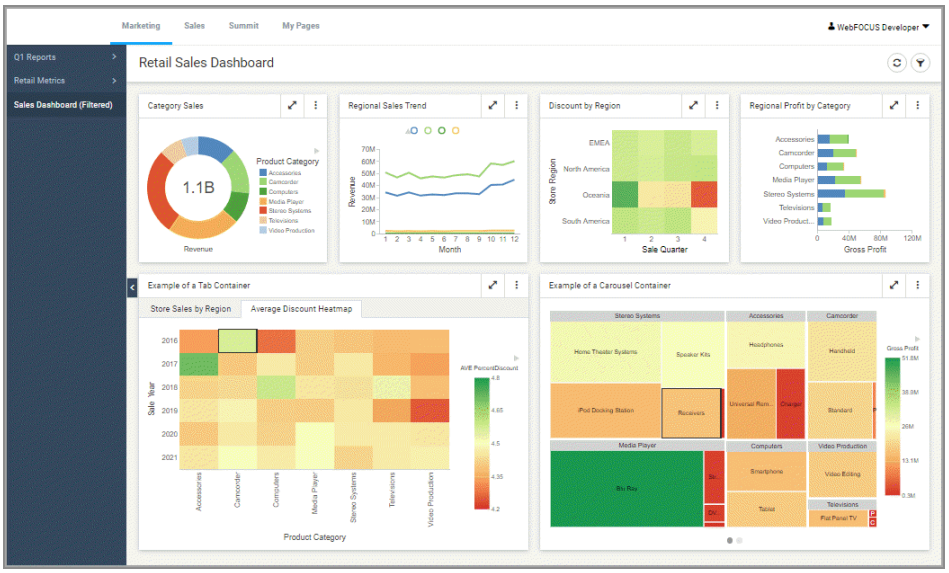
Running Portals

You can run a portal from the following locations on the WebFOCUS Hub:

- Resources tree in the Workspaces area.
- Content section in the Workspaces area.
- Portals area of the Hub.

To run a portal, right-click it then click **Run**.

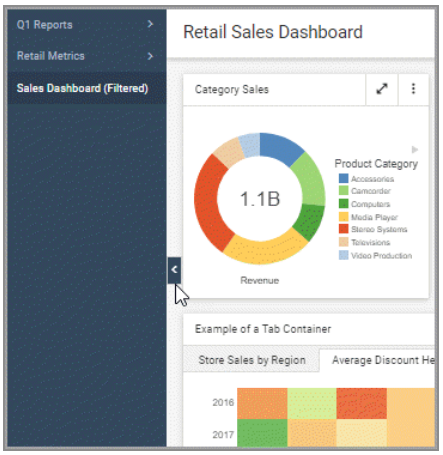
An example of a portal at run time is shown in the following image.



You can perform the following actions in the portal at run time:

- Navigate between pages and levels.
- Interact with content, including Insight-enabled items.
- Collapse the side navigation panel to maximize the space on a page.

  To collapse the side panel, click the **Collapse navigation** arrow as shown in the following image.

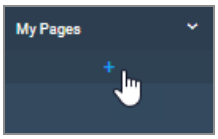
  

  This option is available in Two-level side and Three-level layouts.

- Add personal pages.

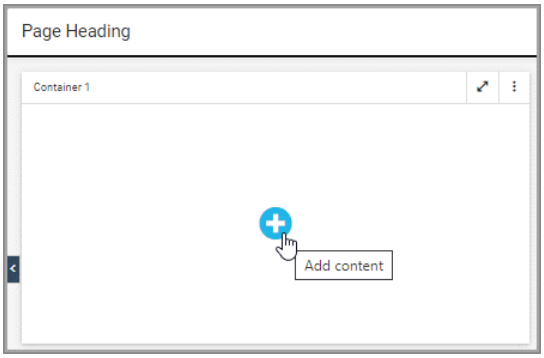
  To add a personal page, navigate to the My Pages level, and click the + icon, as

shown in the following image.



- Select a layout for your personal page.
- Populate your personal page with content available to you in your repository.

  To add a content item to the personal page, click the **Add content** icon, as shown in the following image, and, in the Select Item dialog, navigate to the item of your choice.



- Use the built-in filter window to refine your personalized content.
- Use the Bookmark feature to save a specific filtering configuration of your personal page.
- Share your personal pages with other users and groups in your organization.
- Use the User menu to access the utilities, help, and administrative settings that are available to you based on your role.

Targeting a Page to Open When Running a Portal

You can target a specific page or sub-page, while running a portal from an alias URL. This URL can then be saved and bookmarked similarly to any other page on the web. To learn more about creating an alias, see Creating Portals.

Target a Page to Open in a Portal at Run Time

Procedure

1. Create a portal as described in Creating Portals, making sure to give your portal a unique alias.

   > **Note:**
   > If your exact alias already exists in the repository, you will not be able to save your portal. Modify the name of your alias to save your portal and close the New Portal dialog.

2. Populate your new portal with levels, as described in Defining a Portal Structure.
3. Generate a URL to the level of your choice by applying the following sequence:

   ```
   http[s]://hostname:port/ibi_apps/portal/portal_alias/page_2
   ```

   where:

   hostname:port

   Are the host name and HTTP port of the web server or application server.

   portal_alias

   Is the name of your alias.

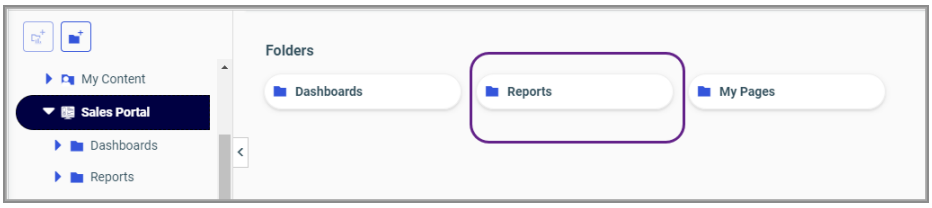
   page_2

   Is the name of the level that you want to open when your portal runs.

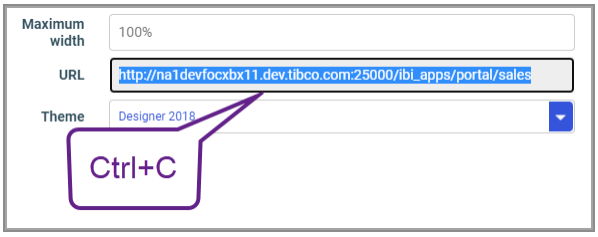
   In our example, we want the second tab to open when the portal runs. Follow these steps to achieve this result:

   a. Locate the level within the portal structure that corresponds to the tab that you want to open at run time.

      In our example, we locate the Reports folder, as shown in the following image.



b. To easily locate the alias link, right-click your portal, click **Edit**, and copy the URL field value, as shown in the following image.

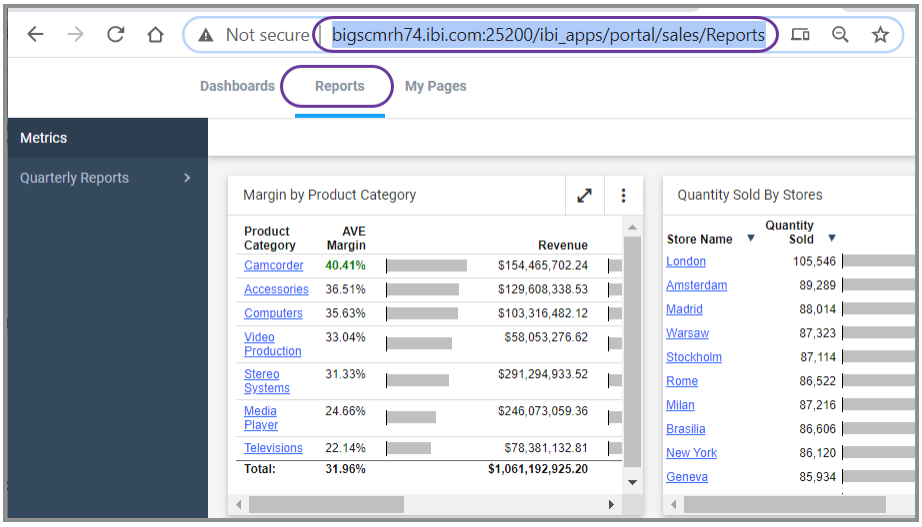


c. In a new browser window, paste your alias URL in the address bar, add / and the name of your level at the end of your URL, in our case **/Reports**.

   Your URL is ready to be run.

4. Press **Enter** to run your URL.

   The portal runs and opens the level that we selected, as shown in the following image.



5. Optionally, bookmark this URL for future use.

Target a Sub-page to Open in a Portal at Run Time

By default, when a portal runs, the first page of the first tab displays. You can change this behavior by creating a direct link to a specific sub-level.

Procedure

1. Create a portal and populate it with levels, as described in the previous procedure.
2. Generate a URL to the sub-level of your choice by applying the following sequence:

   ```
   http[s]://hostname:port/ibi_apps/portal/portal_alias/menu_1/page_2
   ```

   where:

   hostname:port

   Are the host name and HTTP port of the web server or application server.

   portal_alias

   Is the name of your alias.

   menu_1

   Is the name of the level which contains the page that you want to display.

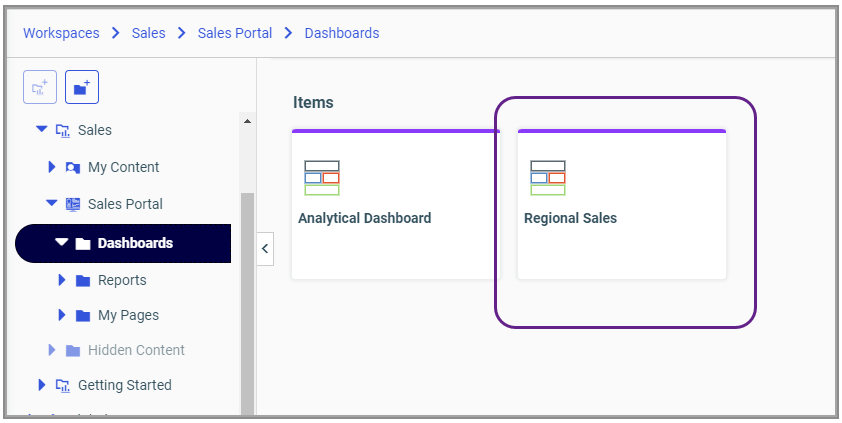
   page_2

   Is the name of the page that you want to display.

   In our example, we want the second page under the first tab to open when the portal runs. Follow these steps to achieve this result:

   a. Locate the page within the portal structure that corresponds to the sub-level that you want to open at run time.

      In our example, we locate the Regional Sales page inside the Dashboards folder, as shown in the following image.



b. Locate and copy the alias URL, as described in the previous procedure.

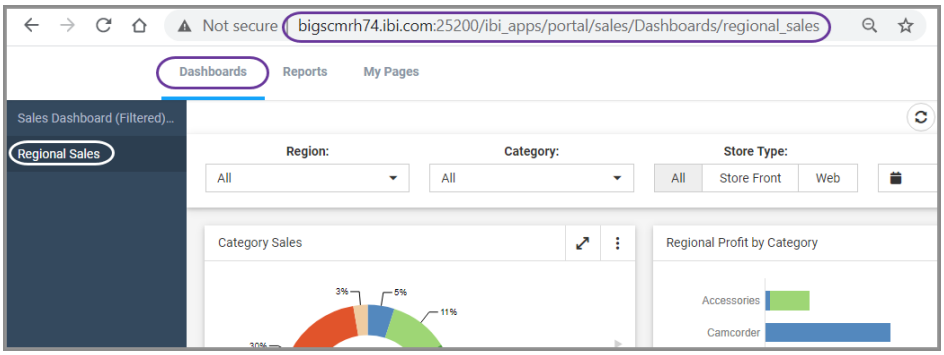
c. In a new browser window, paste your alias URL in the address bar, and add the names of your level and sub-level, separated with the / symbols.

   In our case, we are adding **/Dashboards/regional_sales**.

> **Note:** The URL is case-sensitive. If you are unsure of the correct name of your level or sub-level, right-click this element in the Workspaces area, click **Properties**, and, in the Properties panel, check the Name field value.

3. Press **Enter** to run your URL.

   The portal runs and the second page of the first tab displays, as shown in the following image.



4. Optionally, bookmark this URL for future use.

Launching a Portal with Parameters

You can open a Designer portal with an added benefit of passing parameters to its content across all pages. This feature is useful when you need to narrow large sets of data or in cases when a focus on a specific element is needed. Furthermore, you can save your modified parameterized portal as a URL in your repository for easy reference, or you can display this URL in other pages or portals. You can also build in access to your parameterized portal into drill-down links within a chart or report.

Opening a Portal with Parameters

Procedure

1. In the Workspaces area of the Hub, create a portal, as described in Creating Portals.

   Note:
   It is recommended to create an alias for your portal. This ensures a shorter URL, which is easier to reference and modify.

2. Inside your newly created portal, assemble parameterized content into pages, as described in Creating Pages, and add filters to your pages.

   Note:
   If you want to pass the same parameter across two or more pages of the portal, be sure to include parameterized content and filters for this parameter. If there is also a global name in use, the selection from the first page should carry over and override the URL-provided amper value. Additionally, you can also include a page name in the URL to redirect to that page, and pass an optional parameter to it.

3. Run your portal.

4. In the browser address bar, add the following syntax to your existing portal or alias URL and press **Enter**.

   ```
   ?&PARAMETER_NAME=PARAMETER_VALUE
   ```

Where:

PARAMETER_NAME:

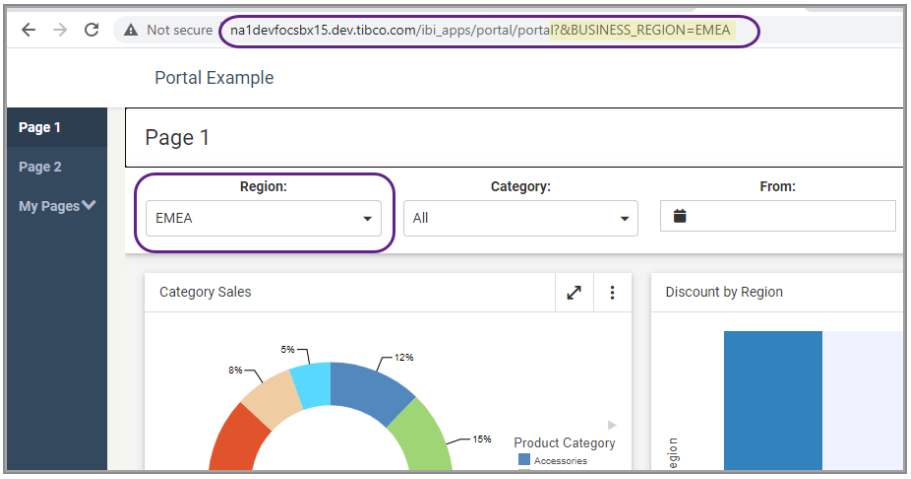
The name of the parameter that you want to pass.

> **Note:** To confirm the exact name of your parameter, open the page in WebFOCUS Designer, click the **Info** button and note the parameter listed in the Parameters/Fields category.

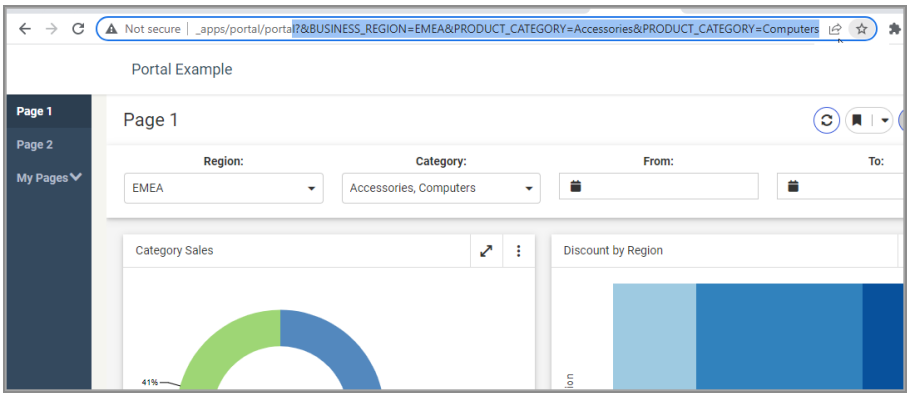
PARAMETER_VALUE

The value of the parameter that you are passing.

In our example, we are specifying the EMEA value for the Region filter, as displayed in the following image.



If you want to pass multiple parameters, simply repeat the syntax for each new parameter at the end of the URL. In our example, we are specifying the EMEA value of the Region filter, and the Accessories and Computers values for the Category filter, as shown in the following image.



Note: When you are specifying multiple values of the same parameter, make sure that this filter supports multiple selections of values.

5. Once you are happy with your modified portal URL, you can save it in your browser and share it with other users in your organization.

Save a Parameterized Portal as a URL

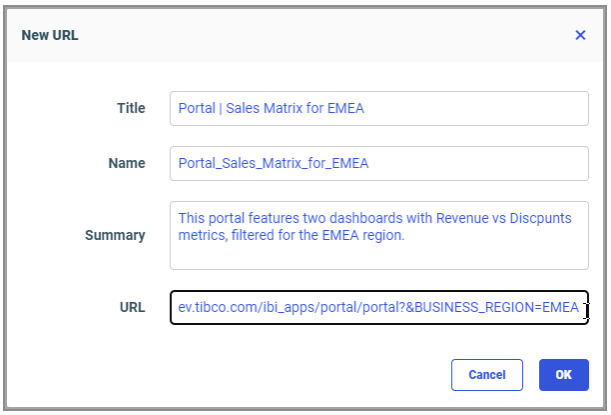
You can save your parameterized portal as a standalone URL content item in your repository.

Procedure

1. Create a portal and modify its URL to pass the desired parameters, as described in the previous procedure.
2. Copy the modified URL.
3. In the Workspaces area of the Hub, from the +Content menu, point to **Other**, and then click **URL**.

   The new URL dialog opens.
4. Paste the modified portal URL into the URL field and populate the **Title** field.
5. Optionally, populate the Summary field, adding a description of your portal.

   An example of a fully populated new URL dialog is shown in the following image.



6. Click **OK**.

   The URL item displays in your repository. You can now run it, share it, and include it in other portals or pages as a content item.

Configure Drill-Down Links to Open a Portal With Parameters

You can create a report or chart with hyperlinks that open a portal with parameters.

Procedure

1. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**.

   WebFOCUS Designer opens.

2. Select the same data source that you used to create content in the pages of your portal.

   After you select a data source, the WebFOCUS Designer canvas loads.

3. Optionally, change the content type by selecting an option from the Content picker.

   In this example, we create a report, since drill-down links in reports appear as easily identifiable hyperlinked text values. Therefore, we select either the grid or a standard report content type. However, you can add drilldowns to any standard chart type as well. Drilldowns added to charts are available from tooltips when you point to an area of the chart.

4. Drag fields from the Field list into the appropriate buckets in the report. Add dimension fields to the Rows and Column Groups buckets, and measure fields to the

Summaries bucket.

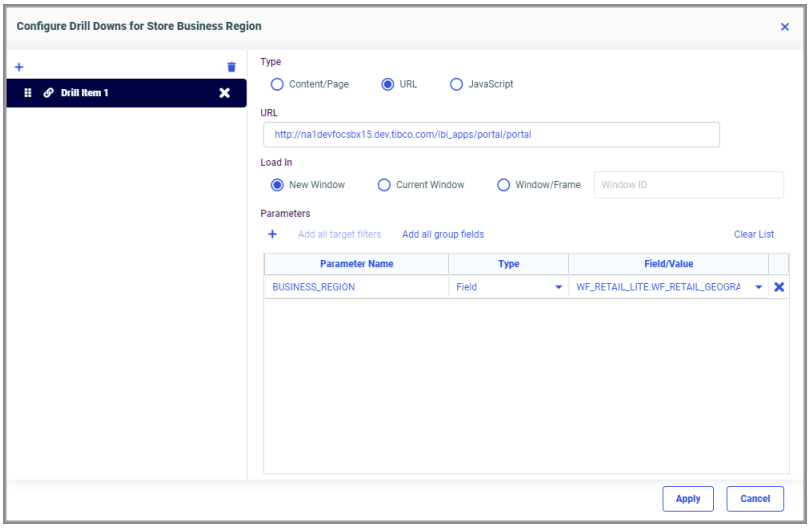
Make sure to add the field by which the content in the portal is filtered when you pass the parameter.

5. Right-click the aforementioned common field in the Rows bucket and click **Configure drill downs**.

   The Configure Drill Downs dialog opens.

6. Click the plus sign (+) button to create a drilldown.
7. Select the **URL** radio button to create a URL drilldown.
8. In the URL field paste the original un-modified URL of your portal or alias.
9. Specify the Load In option for your portal. The available options are: New Window, Current Window, and Window/Frame.
10. Click the plus button in the Parameters section to add a parameter.
11. In the Parameter Name column, type the name of the parameter you want to pass, leave the Type column as Field, and, in the Field/Value column, select the parameter that corresponds to the name you typed.

    An example of the populated Configure Drill Downs dialog is shown in the following image.



12. Click **Apply**.

    The hyperlinks are added to the entries of the selected field.

13. Try clicking the hyperlinks to test the behavior.

    The portal loads and the parameter corresponding to the clicked hyperlink is passed.

14. Save your report and exit WebFOCUS Designer.

Enabling and Sharing Personal Pages

Personal pages are created at run time by the user and allow the new level of versatility in a way users organize and use portals. Personal pages remain visible only to the user that created them, unless the user shares them. Personal pages reside inside the My Pages folder in the repository.

Note: This feature is available in the full version of WebFOCUS.

Enable Personal Pages

Procedure

1. In the Workspaces area, in the Resources tree, select the workspace or folder where you want to create the portal, click the **+Content** button, point to **Application**, and then click **Portal**.

   The New Portal dialog opens.

2. Select **Create My Pages menu**.
3. Make the remaining selections for the new portal, and then click **Create**.

   The new portal is created in the specified workspace or folder.

4. Publish the portal.

   Note: This step is crucial for activating the My Pages menu.

   The personal pages are now enabled and can be added by users at run time.

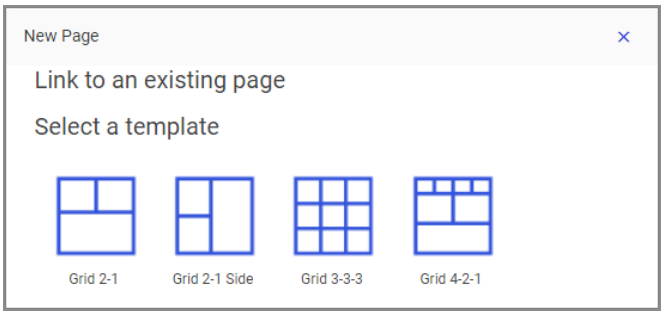
Use Personal Pages

Procedure

1. Run the portal in which personal pages are enabled.
2. Click **My Pages**, and then click the + icon to add a new page.

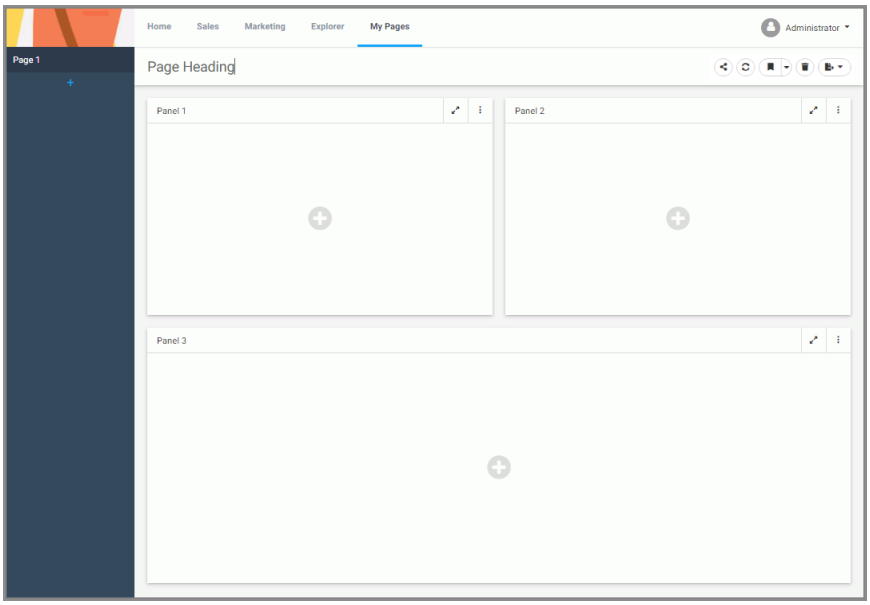
   > **Note:** Depending on your navigation layout, the My Pages area can display as a tab or as a banner link.

   The New Page dialog opens, as shown in the following image, where you can select a template and link to an existing standalone page in the repository.



3. Click a template of your choice.

   The page displays a series of interactive panels, as shown in the following image.



4. Add content to the panels.
5. If parameterized content is added to a page, optionally, click the **Show filters** button to display available filters.

   The Selections dialog opens where you can apply filters to your content.

   > **Note:** You can save your content and filter selections by using the bookmark button.

6. Double-click the Page Heading and type a new title for your personal page.
7. Optionally, double-click the page title in the sidebar and type a new title.
8. To share the page with other users, click the **Share** button .

   The Share with Others dialog opens.
9. Type the names of users and groups with which you want to share your personal page and click **OK**.

   The page is now available to the specified users and the Share button changes color to blue.
10. To revoke access to the page, click the **Share** button again.

    The Share with Others dialog opens where you can remove users or groups from the

sharing list.

> **Note:** If your sharing privilege does not allow you to open the Share with Others dialog, you can share or unshare your personal page simply by clicking the Share button. In this case, the page is shared with every user that has access to the workspace in which the portal resides.

11. To delete the page, click the **Delete** button .

Customizing Portals

All users can remove their own customizations from a portal. Authors, developers and administrators can also remove customizations for all users. Customizations are made when users customize unlocked content inside base portal pages. Personal pages and edits to personal pages are not considered customizations and, therefore, they are not removed.

Remove Customizations From a Portal in the Repository

Procedure

1. In the Workspaces area, in the Resources tree, right-click a portal.
2. Point to **Customizations** and click one of the following options:
   - **Remove my customizations.** Removes your own customizations from a portal.
   - **Remove customizations for all users.** Removes all user customizations that were made to the interactive base pages in the portal.

Remove Customizations From a Portal at Run Time

Procedure

1. From the Menu Bar of a portal, click your username.
2. Click **Remove my customizations**.

   The customizations are removed from the interactive base pages in the portal.

Applying Themes to Portals

You can apply themes to a WebFOCUS portal to customize its look and feel. Themes can be applied to new portals inside the New Portal dialog or to existing portals inside the Edit Portal dialog. A theme affects the look of the entire set of elements of the portal, including colors, opacity, and typeface styles.

There are four themes that WebFOCUS offers:

- Designer 2018
- Light
- Midnight
- Vivid

Additionally, you can create your unique custom theme and apply it to a portal.

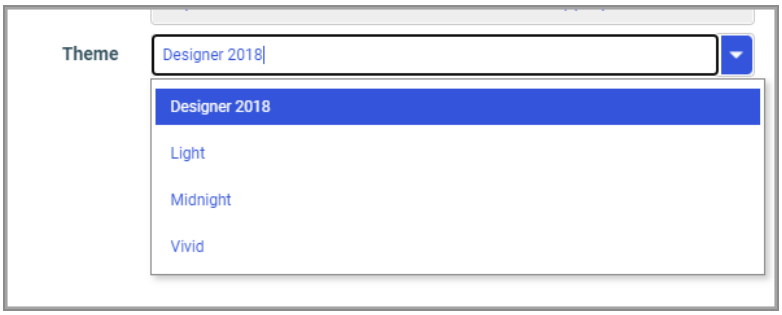
Apply a Theme to a Portal

Procedure

1. In the Workspaces area, right-click a portal that you want to modify, and then click **Edit**.

   The Edit Portal dialog opens.
2. Select a theme of your choice from the Themes dropdown list, as shown in the

following image.



Note: The same setting can be configured for a new portal inside the New Portal dialog.

3. Click **Save**.

   The selected theme is applied to the portal.

Create a Custom Portal Theme

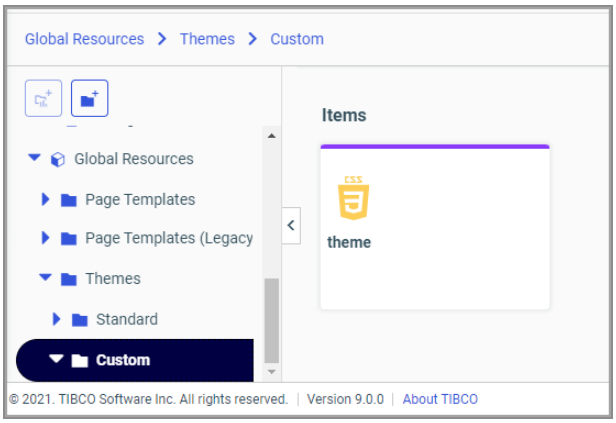
Procedure

1. Sign in to WebFOCUS as an administrator.
2. In the Workspaces area, from the Resources tree, expand the **Global Resources** folder, and then expand the **Themes** folder.
3. Click the **Custom** folder, and then click **New folder** icon above the Resources tree.

   The New Folder dialog opens.
4. Populate the Title field with the name of your custom theme, and click **OK**.

   The custom theme folder is created. Your theme CSS file resides in this folder. If you know which CSS classes should be used for your theme, you can create a new text file, add your code, and save this file as a *Cascading Style Sheet*. Alternatively, you can modify an existing theme CSS file. In this example, we copy and modify the theme CSS file for the Light theme.
5. Expand the **Standard** folder, and then expand the **Light** folder.
6. Copy the theme CSS file, and paste it inside your new custom theme folder.

The following image shows the correct hierarchy of the custom theme file.



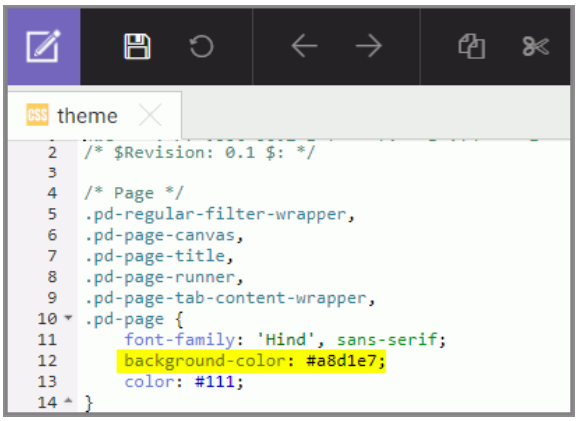
Note: Do not modify the name of the theme CSS file. It is required that it stays the same for all themes. The name of the folder in which the file resides is the theme name that is available in WebFOCUS Designer.

7. Right-click the theme CSS file that you copied, and then click **Edit**.

   The Text Editor opens in the new browser tab.

8. Modify the code to achieve the desired look of the theme.

   In this example, we changed the sidebar, banner, and background colors, as shown in the following images.



```
1355
1356  /* Side Menu */
1357  .bundle-folder-wrapper.pvd-left-main-panel {
1358      background-color: #24315E;
1359  }
1360
```

```
1173
1174  /* Portal Banner */
1175  .pvd-first-portal-banner{
1176      background-color: #F7E9A0;
1177  }
```

9. Save and close the Text Editor.
10. In the Workspaces area, apply the new custom theme to a page, as described in Apply a Theme to a Portal.
11. Run your portal to view the new theme.

    An example of a new theme applied to a portal is shown in the following image.

> **Note:** You can control access to themes, both standard and custom, by configuring the List And Read security rule for the theme folder. To learn more about security rules, see the *ibi™ WebFOCUS® Security and Administration* technical content.

Adding Icons to Portal Levels

You can further customize your portal by adding icons to pages and folders.

Add Icons to Folders and Pages Inside a Portal

Procedure

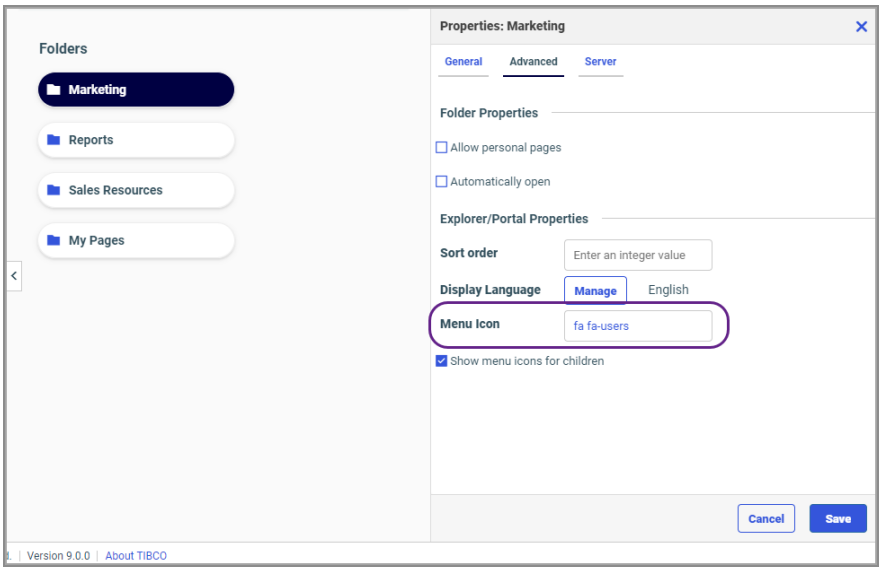
1. Create a WebFOCUS Portal, as described in Creating Portals.
2. Select the level to which you want to add icons, and locate its parent level.

   In our example, we are enabling icons for the top level of navigation, so we are configuring the portal folder itself.
3. Right-click the portal folder and then click **Properties**.

   The Properties panel opens.
4. Navigate to the **Advanced** tab, select the **Show menu icons for children** checkbox, and click **Save**.

   Now, any icons added to the top level pages and folders are visible.
5. Without closing the Properties panel, click the page or folder to which you want to add an icon.
6. In the Menu Icon field, type the CSS class of an icon you want to add.

   The following image shows an example of adding an icon to the Marketing folder.



You can reference available icons and their CSS classes in the following websites:

- https://fontawesome.com/v5/search

- https://material.io/tools/icons/?style=baseline

Click an icon that you want to use in your portal and copy its CSS class. If you are using icons from the fontawesome.com website, your CSS class should look similar to the following:

```
fa fa-circle
```

Note: If you have a license for the Font Awesome Pro icon packs, you can use CSS classes for your Pro icons instead.

If you are using icons from the metrial.io website, your CSS class should look similar to the following:

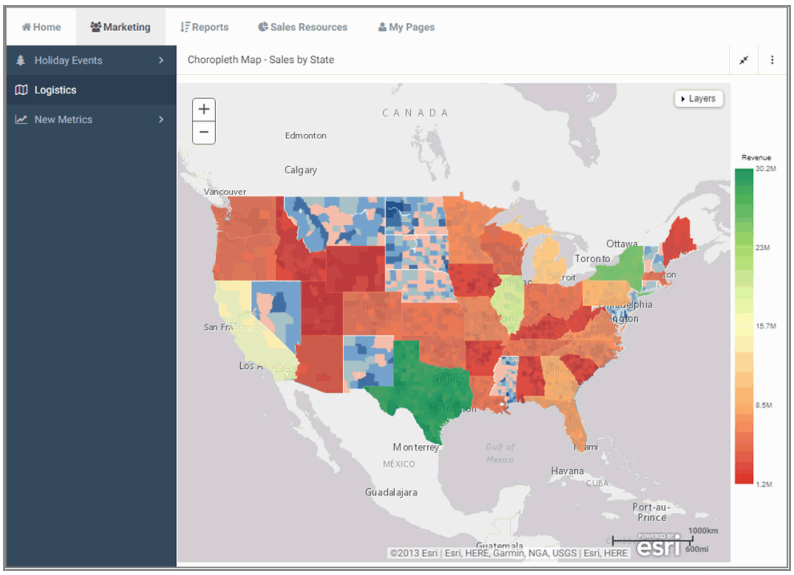
```
material_icons pie-chart
```

7. Repeat the process for other folders and pages of your choice, making sure that the parent folder has the **Show menu icons for children** property selected.

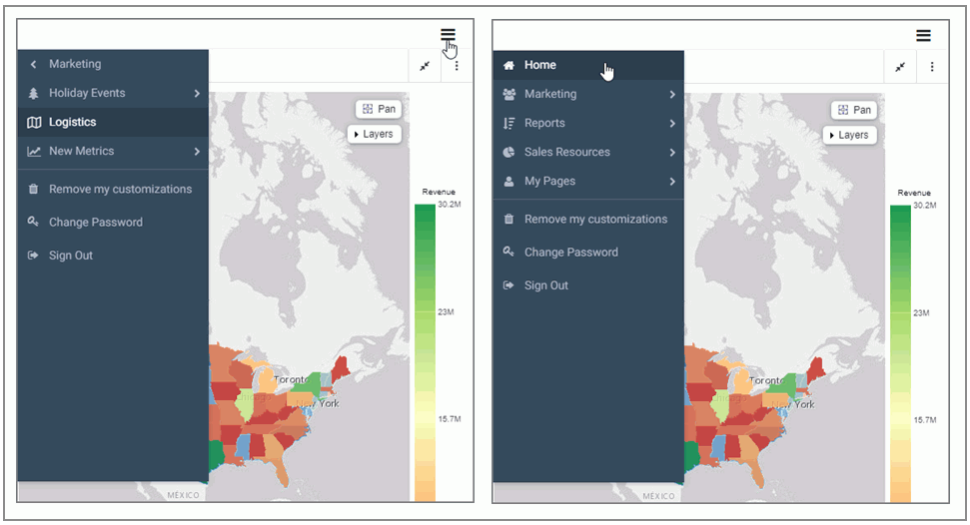
Note: Depending on the type of your navigation layout, certain levels do not display icons. The second level of the two-level side navigation layout does not display icons. The third level of the three-level navigation layout does not display icons. All layouts display icons for the top level of navigation. Responsive menus on mobile devices display icons for all levels of navigation.

8. To see the icons applied, run your portal.

The following image shows the three-level navigation layout with icons added to the top and second levels.



When you resize the window, the same icons display in the side menu, as shown in the following images.



Customising User Menu Options

As you build a new Designer portal or edit an existing one, you can customize the number and nature of options that display in the User menu inside the portal at run time. This capability adds a layer of control over the features and tools that are exposed to the users of the portal.

Customize User Menu Options in a Designer Portal

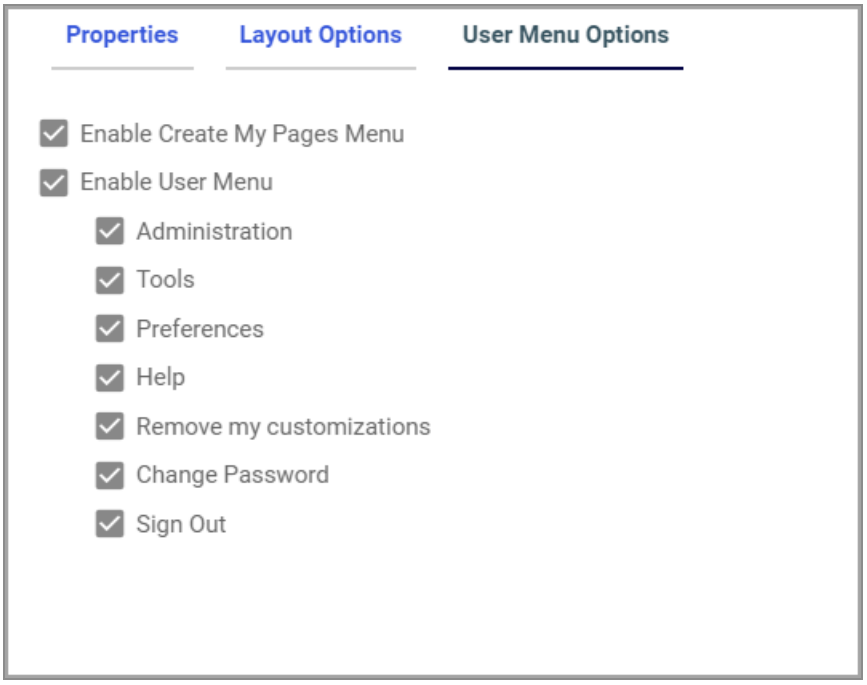
Procedure

1. On the WebFOCUS Hub, in the Workspaces or Portals area, right-click the portal that you want to modify, and then click **Edit**.

   The Edit Portal dialog opens.

2. Navigate to the User Menu Options tab.

   Notice that the Enable User Menu option and the subsidiary options are enabled by default, as shown in the following image.



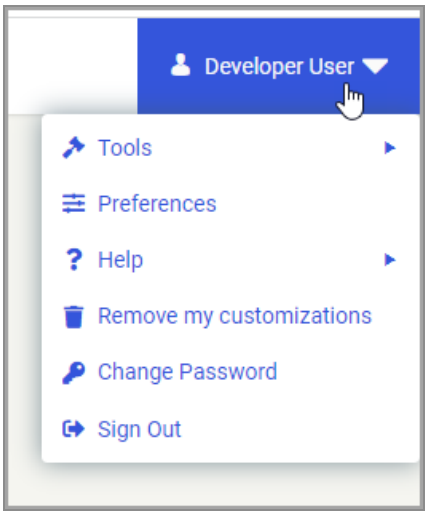
   In this scenario, we want to disable the Administration menu, thus preventing the user of this portal from accessing administrative tools.

3. Clear the **Administration** checkbox and click **Save**.

> **Note:**
> You can also perform this step at the point of creating a portal, as described in Creating Portals.

4. Right-click the portal, and then click **Run**.

   The portal runs, and the modified User menu displays, as shown in the following image.



Using a JavaScript Function to Navigate to a Designer Portal Page

You can use a JavaScript function to dynamically navigate to other pages within your Designer portal, and immediately filter them based on the value that you select. This feature is especially useful in portals that contain multiple portal pages, because it allows you to link to a specific page within it. You can also pass a parameter from a link in the source item to filter the content in the target page, such as charts or reports, to quickly navigate through and show related information in different areas of your portal.

To use the navigateToPage function to jump from one page in a portal to another, perform the following tasks:

1. **Create Parameterized Content.** Create charts and reports to which the links in your source report is point.

2. **Set Up a Portal for the Navigate to Page Function.** Create the landing page for the links and save it in a portal.
3. **Create Hyperlinks in a Source Report.** Create hyperlinks within a report, which you configure to point to a page containing the parameterized content.
4. **Add the Source Report to a Page in the Portal.** Add the source report to a page and add it to the same portal to which the target content was added.
5. **Finalize the Configuration of the JavaScript Function.** Ensure that the navigateToPage JavaScript function can be ran by the source report.

Stage One: Creating Parameterized Content

In this stage, you build parameterized reports and charts that serve as the targets for drill-down links in the source report that you create later.

It is prudent to build this content before creating the source report for a couple of reasons. First of all, these content items generally show detailed information that expands on the information in the report. You can decide on the information that you want to show in these target items, and how they should be filtered. Additionally, when you create the drill-down links in the source report, you need to provide the parameter that you want to pass to these target items, and include the associated field in the source report. You also need to include the IBFS path to the page that contains these target items. Therefore, it is easier to create the target items and add them to a page in the portal first, then add the source report that targets them to a new page in the same portal.

Create Parameterized Content for Hyperlinks

Procedure

1. From the WebFOCUS Hub, click the plus button, then click **Create Visualizations**.

   WebFOCUS Designer opens.
2. Select a data source. This data source should be used for both the target content that you are creating now, and the source report that you create later.
3. Optionally, change the content type using the Content picker. The default content type is a vertical stacked bar chart.

4. Drag fields from the Data pane onto the canvas or into the appropriate buckets on the Settings tab to create a chart or report.
5. Drag a dimension field from the field list to the Filter toolbar to create a prompted filter.

   You also add this field to the source report later, and create a drilldown to pass a selected value from the source report to the parameterized content that you are creating now. You do not need to select default filter values.
6. Optionally, repeat step 5 to create more filters for this item. You can add all of these fields to the drilldown source item to pass values for multiple fields at once.
7. Save your content and close WebFOCUS Designer.
8. Optionally, repeat steps 1-6 to create more content to add to the target page. Filter these items with the same field or fields if you would like to filter them all based on the value selected in the source report.

   Optionally, you can also click **Convert to Page** and then add new containers to create additional charts and reports in the same page on demand. If you choose to create new content directly within a page using this authored page workflow, skip steps 3 through 6 in Stage Two.

Stage Two: Setting Up a Portal for the Hyperlinks

In this stage, you create a portal to which you add a page containing the target content that you created previously.

Set Up a Portal for the Hyperlinks

Procedure

1. Create a portal.

   On the WebFOCUS Hub, in the Workspaces area, select the folder in which you want to create your portal, then, in the +Content menu, point to **Application**, and then

click **Portal**.

2. Give the portal a title, and optionally specify an alias, layout, and other configuration options.

   Click **Create** to create the portal.

3. Create a new page. Click the plus menu and then click **Assemble Visualizations**.

   WebFOCUS Designer opens.

4. Select a page template, or use the Blank template to arrange the content on the page yourself.

   Once you select a page template, the page canvas opens.

5. Add the target content that you created in Stage One to the page.

6. Since you added prompted filters to the target content, a badge appears on the Filters tab on the sidebar.

   Select the **Filters** tab on the sidebar and then click **Add all filters to page**.

   Controls for all parameters are added to the Filter toolbar.

7. Save the page to the portal folder that you created in step 2, and then return to the WebFOCUS Hub.

Stage Three: Creating Hyperlinks in a Source Report

In this stage, you create a simple report with hyperlinks that point to the target page in the portal.

Create a JavaScript Drilldown in a Report

Procedure

1. On the WebFOCUS Hub, click the plus menu and then click **Create Visualizations**.

   WebFOCUS Designer opens.

2. Select the same data source that you used to create the target content in Stage One.

This report contains drilldowns that pass parameter values to those target items, opening and filtering the page containing them when a link is clicked.

After you select a data source, the WebFOCUS Designer canvas loads.

3. Optionally, change the content type by selecting an option from the Content picker.

   In this example, we create a report, since drill-down links in reports appear as easily identifiable hyperlinked text values. Therefore, we select either the grid or standard report content type. However, you can add drilldowns to any standard chart type as well. Drilldowns added to charts are available from tooltips when you point to an area of the chart.

4. Drag fields from the Field list into the appropriate buckets in the report. Add dimension fields to the Rows and Column Groups buckets, and measure fields to the Summaries bucket.

   Make sure to add the field by which the target items are filtered to the Rows bucket.

5. The next step is to create drill-down links on the field that was used to filter the target items. Complete the following steps to add a JavaScript drilldown that navigates to the page that you created in Stage Two.

   a. Right-click that field in the Rows bucket and click **Configure drill downs**. The Configure Drill Downs dialog opens.

      If you added filters for multiple different fields to your target items, add the drilldowns to the lowest level sort field. Associated values for higher level sort fields are included automatically.

   b. Click the plus sign (+) button to create a new drilldown.

   c. Select the **JavaScript** radio button to create a JavaScript drilldown.

   d. In the JavaScript Function text box, type **portalDispatch**.

   e. Add parameters to use in the portalDispatch function.

      Click the plus sign button in the Request Parameters section to add the first parameter.

   f. For the first parameter, change the Type to **Value** using the dropdown menu, and type **navigateToPage** in the Field/Value column.

   g. Add a second parameter by clicking the plus sign button. Change the Type to **Value** and enter the IBFS path to the drilldown target page that you created in Step Two into the Field/Value column.

You can acquire the IBFS path of the page by right-clicking it in the object explorer on the WebFOCUS Hub clicking **Properties**. Copy the text in the Path field of the Properties panel, then paste it into the Field/Value column for the second drilldown parameter in the Configure Drill Downs dialog in WebFOCUS Designer.

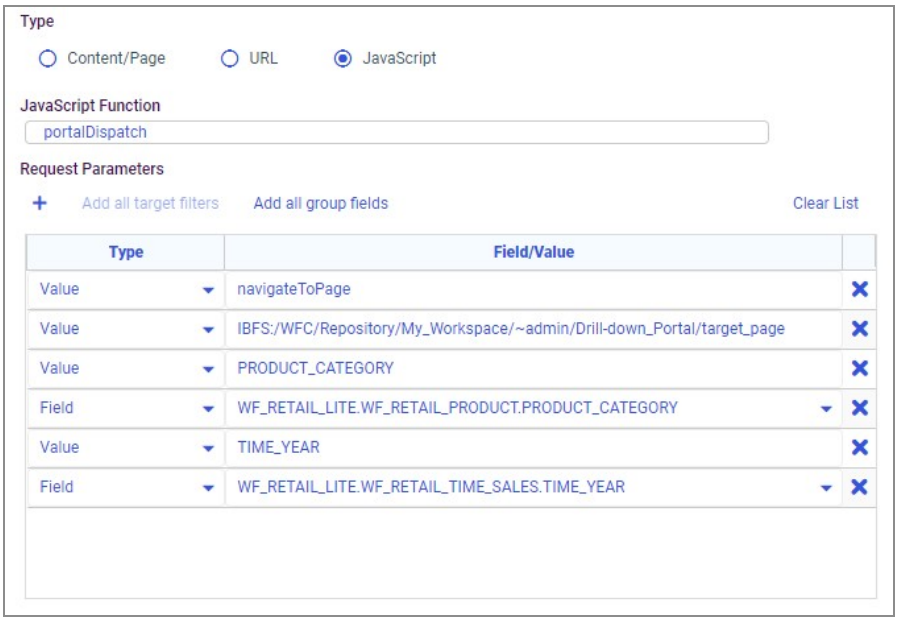
h. Add a third parameter. Change the Type to **Value** and, in the Field/Value column, type the name of the parameter that you want to pass.

   Typically, the parameter name matches the name of the field. You can confirm the parameter name by opening the target page in WebFOCUS Designer, clicking the **Info** button, and noting the parameters listed in the Parameters/Filters category for the items on the page. Alternatively, select a filter control on the page and, on the Settings tab, scroll down to the Parameters section, which shows the name of the parameter associated with the filter control.

i. Add a fourth parameter. Leave the Type as **Field** and select the field in your report that is associated with the parameter that you are passing. This field must be present in the drilldown source content.

j. Optionally, if you wish to pass multiple parameters to the page, for example, if the page contains multiple filters, repeat steps 5h and 5i for each one.

   The following image shows the parameters to drill to a page in a portal, passing values for both the PRODUCT_CATEGORY and TIME_YEAR parameters.



6. Click **Apply** to generate the drill-down links.

   The hyperlinks are added to the entries of the selected field.

   > **Note:** The links remain inactive until the drilldown source report or chart is added to a page within the same portal as the target item.

7. Save the report.

Stage Four: Add the Source Report to a Page in the Portal

The drilldown source report or chart should be run within the same portal as its target item. Therefore, it should be added to a page within that same portal.

Add a Report to a Page in a Portal

Procedure

1. Create a new page. Click the plus menu and then click **Assemble Visualizations**.

WebFOCUS Designer opens.

2. Select a page template, or use the Blank template to arrange the content on the page yourself.

   Once you select a page template, the page canvas opens.

3. Add the drilldown source content that you created in Stage Three to the page.
4. Optionally, add other complementary items to the same page.
5. Save the page to the portal folder that you created in Stage Two, and then return to the WebFOCUS Hub.

   Alternatively, you can save the page to another location in your Repository, and instead create a shortcut to that page within the portal folder structure.

6. You may wish to display the drill-down source report on the first page, so that you can quickly navigate to other items within the portal using the drill-down links instead of the portal tabs and menus. To ensure that the page containing this report appears first, set the sort order for the page or shortcut within the portal.

   a. Right-click the page or page shortcut that you want to appear first within the portal, and then click **Properties**.

      The Properties panel opens.

   b. Select the **Advanced** tab of the Properties panel.

   c. Type a numeric value in the Sort order text box.

      Items with lower sort order values appear first. Since we want the page with the drilldown source report to appear first, type a negative value, such as **-1**, into the Sort order text box, causing it to appear before items with the default sort order of 0.

   d. Click **Save** in the Properties panel to apply the new sort order.

Stage Five: Finalize the Configuration of the JavaScript Function

The portalDispatch JavaScript function is defined in a .js file in your WebFOCUS installation. In order for WebFOCUS to find and run this function, you must configure the path on the WebFOCUS Reporting Server edasprof.prf profile using the JSURLS property.

Properties set in edasprof.prf are applied to any procedures run against that WebFOCUS Reporting Server.

Add a JavaScript File Path to edasprof.prf

Procedure

1. On the sidebar of the WebFOCUS Hub, select the **Management Center**.
2. Under the Server Administration section, select **Server Workspaces**. The Workspaces view of the WebFOCUS Reporting Server browser interface opens.

   Alternatively, navigate to the WebFOCUS Reporting Server browser interface using the URL:

   ```
   hostname:HTTPport
   ```

   where:

   hostname

   Is the name of the machine where the WebFOCUS Reporting Server is hosted.

   HTTPport

   Is the HTTP(S) port number. If running against HTTP, the default value is **8121**.

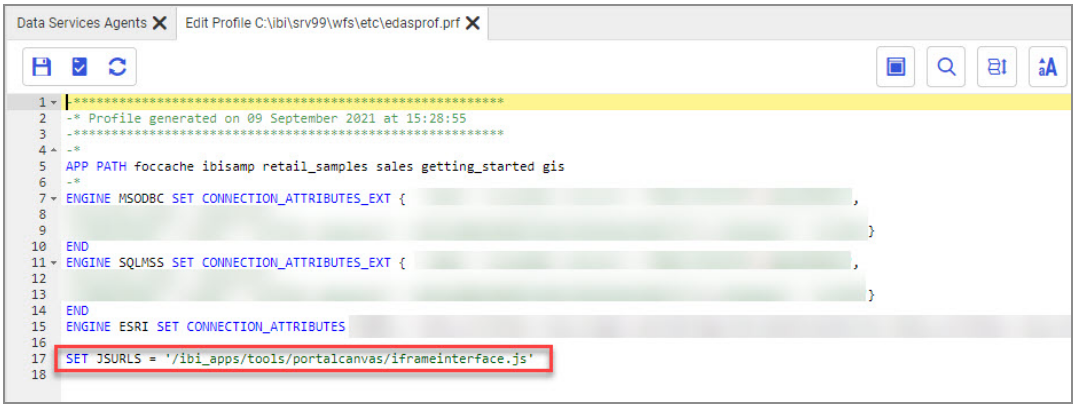
   When running locally, the default address of the WebFOCUS Reporting Server browser interface is localhost:8121.

   In the WebFOCUS Reporting Server browser interface, open the **Tools** menu , and click **Workspace**.
3. On the Server Workspaces page, in the resource tree, expand **Configuration Files**, right-click **Server Profile - edasprof.prf**, and click **Edit**.
4. On a new line, paste the following text:

   ```
   SET JSURLS = '/ibi_apps/tools/portalcanvas/iframeinterface.js'
   ```

> **Note:** If your environment does not use the default context root, replace the **ibi_apps** context root in the JSURLS path above with the one used in your environment.

Once added, your environments edasprof.prf file may resemble the following image.



5. Save your edits to edasprof.prf.

Result

You can now drill from the drilldown source report to the target page that you created. In the Workspaces view of the WebFOCUS Hub, right-click the portal in the object explorer or Resource tree and click **Run**. When the portal loads, click a drill-down link in the report. The target page loads and is automatically filtered for the value that you selected in the report. To filter the page again for a different filter value, select a new value from the filter control and click the **Refresh** button on the page toolbar.

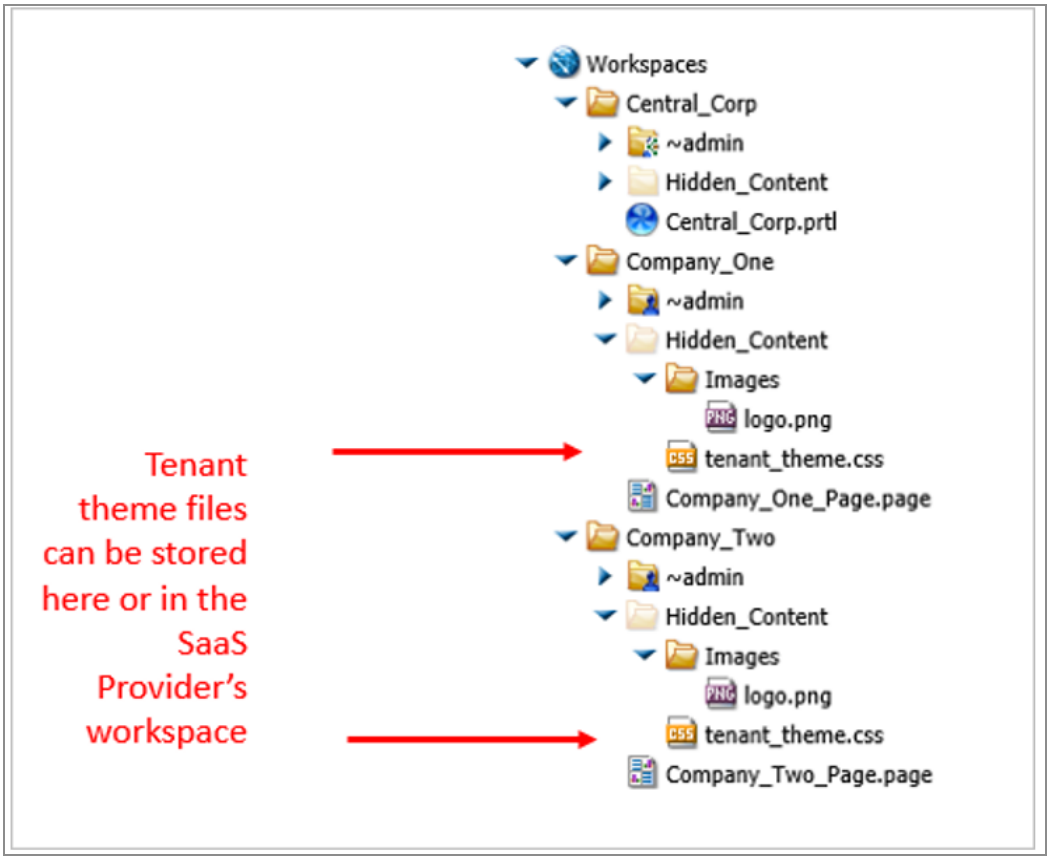
Configuring Dynamically Customized Designer Portals for Multiple SaaS Tenant Groups

If your organization supports a diverse range of customer groups that cover multiple corporate entities or geographic regions, you may need to create portals that make a single set of information available to a variety of groups using a variety of corporate identities.

By organizing users from different functional or business groups into SaaS tenant workspaces and creating customized themes and logos for each one, you can create

portals that make the same information available to diverse customer groups in multiple customized environments.

In this specialized portal configuration, each tenant workspace contains the users assigned to a specific entity. As shown in the following image, they also contain files for the logo and theme that customize the portal interface to a look and feel that is familiar and appropriate for the members of the selected group.



A centralized workspace containing users from all tenant groups, supports the portal itself. All development and maintenance of portal content take place within the central workspace, maximizing the efficiency of information delivery.

Users assigned to individual SaaS Tenant groups view these centralized portal pages using the logo and tenant theme that are appropriate for their group.

To allow for varying themes and logo files, the centralized portal uses symbolic IBFS Paths that present users with the portal theme and logo assigned to their group. Symbolic IBFS paths use pre-configured variables, such as ##{WF_PrimaryGroup}, to create a relative path to these resources that are resolved when a user runs the portal.

Once established, the Portal uses relative paths to theme and logo file images stored in SaaS tenant groups and provides administrators with a customized user interface that is efficient and easy to maintain.

Understanding the Configuration Requirements for Designer Portals That Use Multiple Themes or Logos

The configuration of a Designer Portal that supports multiple SaaS Tenant groups with varying themes and logos is a multiphase process that requires the creation of tenant workspaces for each tenant group and a separate workspace for the content portal.

As a best practice, we recommend that you use the following workflow when creating a Multi-SaaS Tenant portal using symbolic IBFS paths.

1. Have an administrator create the workspaces you need.
    - You need a SaaS tenant workspace for each group that must use a different theme or logo.
    - You also need a separate enterprise workspace to contain the centralized portal that is accessible to all tenant users.

      For more information, see the *How to Create a Workspace* topic in the *ibi™ WebFOCUS® Security and Administration* technical content.
2. Have an administrator or group administrator assign a sample user to each tenant workspace.
    - You need one sample user assigned to the top-level security group for each tenant workspace.

      The tenant workspace group must be defined as the primary group for each user.
    - Each sample tenant user must also be assigned to the Advanced Users security group in the workspace that supports the portal.

      For more information, see the *How to Add a User to a Group* topic in the *ibi™ WebFOCUS® Security and Administration* technical content.
3. Create a CSS Theme file for each tenant workspace.

- Create a file named *tenant_theme.css* that contains classes that define the unique theme for each tenant.
- Save the tenant_theme.css file in the Hidden_Content folder of the tenant workspace.

4. Assign a logo file to each tenant workspace.
   - In the Hidden_Content folder, create a sub-folder entitled Images.
   - Create a logo file for each tenant and place it in the Hidden_Content/Images folder for each tenant workspace.
   - Publish the Images folder and the logo file.
5. Create any required tenant-specific portal pages for each tenant workspace.
   - Develop all content for the tenant-specific portal page within the tenant workspace. The use of content or data sources contained in other workspaces adds an extra group to the configuration that conflicts with the ability of the product to work with ##{WF_PrimaryGroup}.
   - Create and publish tenant-specific portal pages for each tenant group that requires them within their tenant workspace.
   - Create a shortcut for each portal page within the tenant workspace.
6. Create a centralized portal that includes a symbolic path for tenant-theme.css files and logo image files.
   - Develop all content for centralized portal pages within the centralized portal workspace. The use of content or data sources contained in other workspaces adds an extra group to the configuration that conflicts with the ability of the product to work with ##{WF_PrimaryGroup}.
   - Create the portal in an enterprise workspace available to all.
   - Enter the IBFS Symbolic Path to the tenant_theme.css file using the ##{WF_PrimaryGroup} variable in the Theme field of the centralized portal.
   - Enter the IBFS Symbolic Path to the logo image file in the Logo field of the centralized portal.
   - Because you are using IBFS paths that point to the same location in each different workspace, ensure that you use the same location for the logo file and theme file in each tenant workspace.

7. Add Linked Tenant Portal Pages to the Centralized Portal.
    - Copy and paste the shortcuts of tenant-specific pages that you created earlier to the centralized portal workspace.
8. Publish Content.
    - Publish the centralized portal and all of its contents.
    - Ensure that content in all individual tenant workspaces is published.
9. Test Portals.
    - Sign in as a user from each tenant group and run the portal.
    - Ensure that the logo, styling, and tenant-specific pages are appropriate.
    - Ensure that common pages are available and conform to tenant-specific styling.
10. Have an administrator or group administrator assign all remaining users to security groups.
    - Assign the users in each tenant group to the top-level security group for that tenant workspace.
    - Assign all users to the Advanced User security group in the workspace that supports the portal.

      For more information about assigning or mapping users to groups, see the *ibi™ WebFOCUS® Security and Administration* technical content.

Assigning Customized Logos to Tenant Workspaces for Designer Portals

The symbolic path defined in the Logo field of the centralized portal directs the call for a logo image to a customized logo file in the workspace of the user who issued the request to run the portal.

In order for this link to work successfully, each tenant workspace must contain its own logo file in the Images subfolder of the Hidden_Content folder within the tenant workspace.

Each logo image file must use the same name as the logo file identified in the Logo field of the centralized portal, “logo.”

Create an Image Folder in Each Tenant Workspace

Procedure

1. Sign in to WebFOCUS as an administrator and navigate to the Workspaces area.
2. In the Resources tree, expand the tenant workspace to which you want to add a customized CSS theme file.
3. Under your selected workspace, select **Hidden Content**.
4. In the content section, click the **+Content** button, point to**Other**, and then select **Folder** to open the New Folder window.
5. Enter Images in the Title field, and select **OK**.
6. Right-click the new *Images* folder and select **Publish**.
7. Repeat this procedure for each tenant workspace.

Upload a Logo File to a Tenant Workspace

Procedure

1. In the Workspaces area, in the Resources tree, select the tenant workspace to which you want to add a logo file, navigate to the Hidden_Content folder and then to the Images folder.
2. In the content section, click the **+Content** button, point to **Other**, and then select **Upload file** to locate the logo image file.
3. Navigate to the location of the logo file, select it, and then select **Open** to close the dialog and complete the upload.
4. Right-click the new image file and select **Publish**.
5. Repeat this procedure for each tenant workspace.

Creating Tenant-Specific Theme CSS Files for Designer Portals

The tenant_theme.css file contains any additional customizations that alter the look and feel of the default portal frame and features.

To ensure that the symbolic IBFS Path in the main portal connects to the tenant_theme.css file for every tenant, you must save it in the Hidden_Content folder of each tenant workspace and include this folder in the full symbolic IBFS path. You must also use the same name for each tenant workspace theme file, tenant_theme.css.

You can use the text editor to create a .css file and enter the classes you wish to add or modify directly.

Configure Customized CSS Theme Files for Tenant Workspaces Using the Text Editor

Procedure

1. Navigate to the Workspaces area.
2. In the Resources tree, expand the tenant workspace to which you want to add a customized CSS theme file.
3. Under your selected workspace, select **Hidden Content** to open the Hidden Content folder.
4. In the content section, click the **+Content** button, point to **Other**, and then select **Text Editor** to open the New Text Resource window.
5. Under the Select a File Type banner, select **Web**, and then select **Cascading Style Sheet (css)** to open the Text Editor window.
6. Enter CSS classes and CSS properties that construct the theme that is unique to this tenant group in the Text Editor window.
7. When your customized tenant-theme.css file configuration is complete, select **File** and **Save as**, save the file as *tenant_theme.css* in the Hidden_Content folder of the tenant workspace, and close the text editor.

8. In the content section of the Hidden_Content folder, right-click the new tenant_theme.css file and select **Publish**.
9. Repeat this procedure for each tenant workspace.

Creating Tenant-Specific Designer Portal Pages

If an individual tenant group needs one or more portal pages that are to be visible only to members of that group, create these pages within the tenant workspace and link to them from the main centralized portal. This limitation ensures that members outside of the tenant group do not see pages intended only for the tenant group.

When you have created a tenant-specific portal page, create a shortcut to it within the tenant workspace. When you create the shortcut within the tenant workspace, the rules of that workspace apply to the shortcut as well as the portal page, and the Navigation bar in the centralized portal displays an entry for the portal page only to users who belong to the tenant group.

You must develop all content for the tenant-specific portal pages within the tenant workspace. The use of content or data sources contained in other workspaces adds an extra group to the configuration that conflicts with the ability of the product to work with ##{WF_PrimaryGroup}.

Create a Visualization from New Content in WebFOCUS Designer

Use the following generalized steps to create a tenant-specific visualization from new content in WebFOCUS Designer:

Procedure

1. On the WebFOCUS Hub, select **Visualize Data** to open WebFOCUS Designer in a new browser tab.
2. Select the tenant workspace, and select a data source available from that workspace to load options that create a single content item.

> **Note:**
> Select only data sources that are available within the workspace. Do not use data sources outside of the workspace.

3. Start the visualization by creating a new chart or report.
   a. From the Content picker, select a content type. You can choose from different chart types and report layouts
   b. With the Fields tab selected on the sidebar, drag fields from the Resources panel into the buckets in the Properties panel to create content.

      Or

      Double-click a field or drag it onto the canvas to add it to the default bucket for that field type.
   c. If you want to filter your content, drag the field on which the filter should be based into the Filter toolbar or Filters bucket.

      Prompted filters in the Filter toolbar affect the entire page, while static filters in the Filters bucket affect only the item for which they were created.
   d. Use the options of the Format tab of the Properties panel to style your content.
4. To create a page that only contains a single item, select **Page** on the Designer toolbar and skip to step 7.

   The item moves into a container, but no second container is added.
5. To create a page with multiple content items, select **Add visualization** on the Designer toolbar to turn the visualization into a page.

   The first item that you created moves into a container, and a second container is created.
   a. Continue adding content to the page by dragging an existing content item from the Container tab on the sidebar, or by selecting **Add visualization** again to create a new container. You can then create a new content item as outlined in step 3.
   b. You can also drag a field from the field list onto an empty area of the canvas to create a new container with content using that field.
6. Style and format areas on the page using the options on the Properties panel.

The entire page, sections, containers, filter controls, and filter cells all have their own set of styling and formatting options.

You can also preview the visualization to see run-time behavior by clicking **Run in new window.**

7. When you have finished creating your visualization, select **Save** and assign a name to it.
8. In the content section of the tenant workspace, right-click the new portal page and select **Publish**.
9. Repeat this procedure for any remaining tenant workspace that requires visualizations from new content.
10. Follow the procedure, How to Create a Visualization from Existing Content in WebFOCUS Designer for any remaining tenant workspace that requires visualizations from existing content.

Create a Visualization from Existing Content in WebFOCUS Designer

Use the following generalized steps to create a tenant-specific visualization from existing content in WebFOCUS Designer:

Procedure

1. On the WebFOCUS Hub, select the **plus** button and then select **Assemble Visualizations** to open WebFOCUS Designer in a new browser tab.
2. In WebFOCUS Designer, select a template for the page. You can use a predefined template, or select **Blank** to build the page from scratch.
3. Add content to the page by selecting **Content** on the sidebar, navigating to an item in the Resources panel, and then dragging it onto the canvas.

   Or

   Create a container for an item by selecting **Container** on the sidebar and dragging a container onto the canvas, and then adding content to the container.

> **Note:** Select only content that was created within the workspace. Do not include content that was developed outside of the workspace.

4. Continue adding content to the page by performing the following steps.
   a. Add a new container by dragging it from the Container tab on the sidebar, or selecting **Add visualization**.
   b. Select **Content** on the sidebar to access items that you can add to containers on the page or drag directly onto the canvas.
5. Select different areas of the page, and style and format them using the options on the Properties panel.

   The entire page, sections, containers, filter controls, and filter cells all have their own set of styling and formatting options.

   You can also preview the visualization to see run-time behavior by clicking **Run in new window.**
6. When you have finished creating your visualization, select **Save** and assign a name to it.
7. In the content section, right-click the new portal page and select **Publish**.
8. Repeat this procedure for any remaining tenant workspace that requires visualizations from existing content.
9. Follow the procedure, How to Create a Visualization from New Content in WebFOCUS Designer for any remaining tenant workspace that requires visualizations from new content.

Create and Publish a Tenant-Specific Page Shortcut

To limit access to a tenant-specific portal page to members of the tenant group, create the shortcut to the page within the tenant workspace. You can copy the shortcut and paste it into the centralized portal structure later.

Procedure

1. In the content section of the tenant workspace, right-click the tenant page, and select **Create Shortcut**.
2. Right-click the new shortcut, and select **Publish**.
3. Repeat this procedure for every tenant-specific portal page that must be included in the centralized portal.

Creating a Centralized Designer Portal for Common Use

The centralized portal contains all of the links to data sources and content that are available to tenant users. Content pages, based on a portal template that uses a symbolic reference to tenant_theme.css files, make information available to all users in the appropriate format.

Enter the IBFS Symbolic Path to the variable style sheet file in the Theme field and the Logo field of the main portal. Because you are using IBFS paths that point to the same location in each different workspace, ensure that you use the same location for the logo and theme files in each tenant workspace.

You must develop all content for the centralized portal pages within the centralized portal workspace. The use of content or data sources contained in other workspaces adds an extra group to the configuration that conflicts with the ability of the product to work with ##{WF_PrimaryGroup}.

Create a Centralized Designer Portal With a Symbolic Reference to Tenant Theme Files

Procedure

1. Navigate to the Workspaces area.
2. In the Resources tree, select the workspace for the centralized portal.
3. In the +Content menu, point to **Application**, and then select **Portal** to open the New Portal dialog.

4. Type a descriptive title for the portal in the Title field.

   As you type, WebFOCUS automatically assigns the value you type in the Title field, adjusted to conform to IBFS rules, to the Name field. You can edit or replace this value with a custom name if required.

   WebFOCUS also automatically assigns the appropriate IBFS Path to the portal, based on the location of the workspace and the title you enter, to the Path field, and an external version of the path that does not begin with the IBFS parameter in the URL field.

5. Enter a short name to reference your portal in the Alias field.

6. Enter the following relative path to the location of the logo file in the Logo field:

   ```
   IBFS:/WFC/Repository/##{WF_PrimaryGroup}/Hidden_
   Content/Images/logo.png
   ```

   Where:

   IBFS:/WFC/Repository

   Is the opening path that identifies the IBFS system, the WebFOCUS Content subsystem, and the Repository where all content folders are located within the IBFS system.

   ##{WF_PrimaryGroup}

   Is the variable that redirects the Path to the primary tenant workspace group to which the user working with the Portal belongs.

   Hidden_Content

   Is the folder within each tenant workspace that contains the theme and logo files.

   Image/logo.png

   Is the remaining path within the Hidden_Content folder to the logo file. This path must be consistent in all tenant workspaces. In this example, we use a .png file, but you can use other image file formats as well.

> **Note:** You can confirm the validity of the path you use in this field by reviewing the path assigned to the tenant workspace folders in the Properties panel.

7. Select the layout for your portal in the Navigation field.
8. Enter the following relative path to the location of the theme file in the Theme field and delete the default value displayed in this field.

```
IBFS:/WFC/Repository/##{WF_PrimaryGroup}/Hidden_Content/tenant_
theme.css
```

Where:

IBFS:/WFC/Repository

Is the opening path that identifies the IBFS system, the WebFOCUS Content subsystem, and the Repository where all content folders are located within the IBFS system.

##{WF_PrimaryGroup}

Is the variable that redirects the Path to the primary tenant workspace group to which the user working with the Portal belongs.

Hidden_Content/tenant_theme.css

Is the remaining path within each tenant workspace to the file containing the theme for members of that tenant group.

> **Note:** You can confirm the validity of the path you use in this field by reviewing the path assigned to the tenant workspace folders in the Properties panel.

9. If you want to allow users to create personal pages in this portal at run time, select the **Create My Pages** menu checkbox.
10. Select **Create** to close the dialog and create the new portal structure in the centralized portal workspace.
11. Create pages and assemble content that must be visible to all tenant groups within

the folder for the new centralized portal in the centralized portal workspace.

> **Note:**
> When creating pages for the centralized portal, you must only use content that was created within the workspace. Do not include content that was developed outside of the workspace.

Adding Tenant-Specific Portal Pages to the Centralized Designer Portal

To include tenant-specific portal pages in the centralized designer portal, you must add shortcuts for the linked pages to the centralized portal.

To ensure that tenant-specific portal pages appear only to the tenant groups to whom they apply, you must create the shortcut to the page within the tenant workspace. You must then copy the shortcut from the tenant workspace and paste it to the portal folder within the workspace that contains the centralized portal.

By creating the shortcut within the tenant workspace, you inherit the security rules of that workspace when you copy and paste the shortcut to the centralized portal workspace. As a result, the shortcuts are visible in the navigation bar only to tenants who are members of the group.

Copy and Paste Shortcuts to Tenant-Specific Portal Pages to the Centralized Portal

Procedure

1. Navigate to the Workspaces area.
2. Expand the tenant workspace that contains the tenant page you want to include in the centralized portal.
3. Right-click the shortcut to the tenant-specific portal page to be included in the centralized portal, and click **Copy**.

4. Navigate to the workspace that contains the centralized portal.
5. Expand the folder for the centralized portal and navigate to the location inside the centralized portal folder structure at which you want to add the page.
6. When you reach the appropriate location within the centralized portal workspace, right-click anywhere in the content section and select *Paste*.
7. Repeat steps 2 - 6 for each shortcut in your selected workspace that must be included in the centralized portal.
8. Repeat this procedure for each tenant workspace that contains shortcuts to tenant-specific portal pages that must be included in the main portal.

Publishing Content

When the designer portal is ready and all tenant workspaces and tenant workspace groups are prepared, you must make the portal and related workspaces available by changing them to Published status.

Publish a Designer Portal

Procedure

1. Sign in as an administrator, if you are not signed in already.
2. Right-click the portal in the content section of the WebFOCUS Hub and select **Publish** from the shortcut menu.

Testing the Designer Portal User Experience

Before you can announce the availability of the portal for general use, you must first ensure that the appropriate theme and logo are assigned to the portal for users from each tenant group.

Remember that the portal fails to display content properly when you run it in the centralized enterprise workspace. You must base your testing on how the portal appears to users from each tenant group, not in the centralized workspace.

Test the Portal User Experience

Procedure

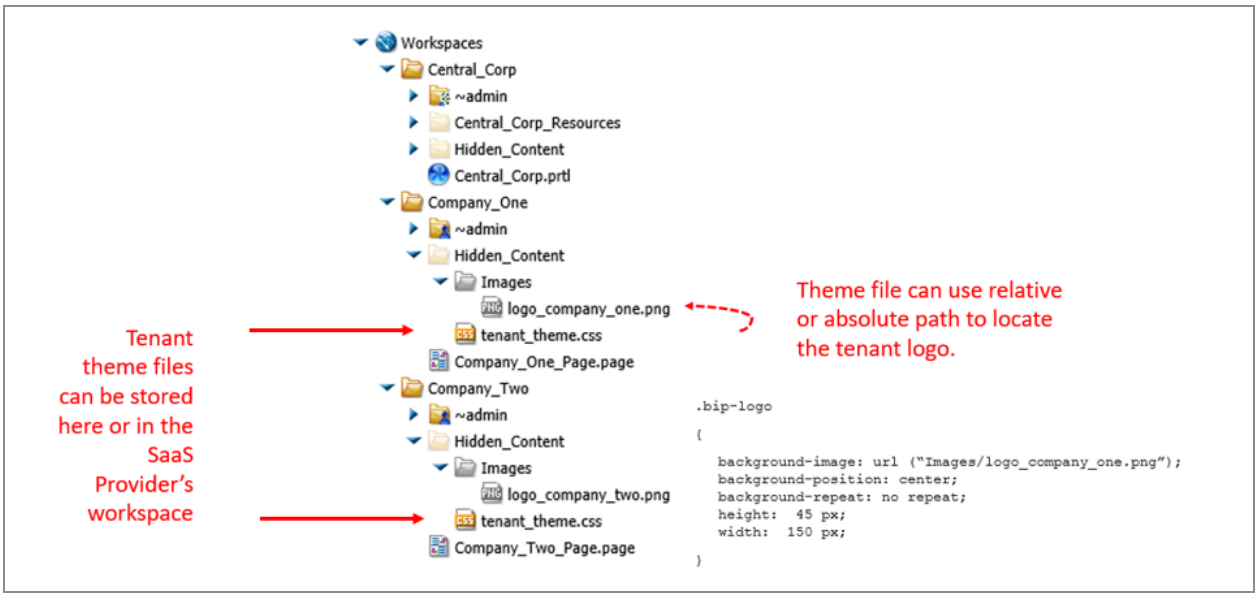
1. Sign in as a user from each tenant group and run the portal.
2. Ensure that the logo, styling, and tenant-specific pages are appropriate.
3. Ensure that common pages are available and conform to tenant-specific styling.
4. If you encounter unexpected results, review the portal and tenant workspace configurations to ensure that your configuration conforms to the shared portal design.
5. Repeat this procedure for each tenant group.

Configuring Dynamically Customized Collaborative Portals for Multiple SaaS Tenant Groups

If your organization supports a diverse range of customer groups that cover multiple corporate entities or geographic regions, you may need to create portals that make a single set of information available to a variety of groups using a variety of corporate identities.

By organizing users from different functional or business groups into SaaS tenant workspaces and creating customized themes and logos for each one, you can create portals that make the same information available to diverse customer groups in multiple customized environments.

In this specialized portal configuration, each tenant workspace contains the users assigned to a specific entity. As shown in the following image, they also contain files for the logo and theme that customize the portal interface to a look and feel that is familiar and appropriate for the members of the selected group.



A centralized workspace containing users from all tenant groups supports the portal itself. All development and maintenance of portal content take place within the centralized workspace, maximizing the efficiency of information delivery.

Users assigned to individual SaaS Tenant groups view these centralized portal pages using the logo and tenant theme that is appropriate for their group.

To allow for varying themes and logo files, the centralized portal uses symbolic IBFS Paths to present users with the portal theme and logo assigned to their group. Symbolic IBFS paths use pre-configured variables, such as ##{WF_PrimaryGroup}, to create a relative path to these resources that are resolved when a user runs the portal.

Once established, the Portal uses relative paths to theme and logo file images stored in SaaS tenant groups and provides administrators with a customized user interface that is efficient and easy to maintain.

Understanding the Configuration Requirements for Collaborative Portals That Use Multiple Themes or Logos

The configuration of a Collaborative Portal that supports multiple SaaS Tenant groups with varying themes and logos is a multiphase process that requires the creation of tenant workspaces for each tenant group and a separate workspace for the content portal.

As a best practice, we recommend that you use the following workflow when creating a Multi-SaaS Tenant portal using symbolic IBFS paths.

Procedure

1. Have an administrator create the workspaces you need.
    - You need a SaaS tenant workspace for each group that must use a different theme or logo.
    - You also need a separate enterprise workspace to contain the centralized portal that is accessible to all tenant users.

      For more information, see the *How to Create a Workspace on the WebFOCUS Home Page* topic in the ibi™ WebFOCUS® *Security and Administration* technical content.
2. Have an administrator or group administrator assign a sample user to each security group.
    - Assign users in each tenant group to the workspace for that tenant. Assign users to the security group whose range of privileges most closely matches their responsibilities.
    - Assign all users to the same security group in the workspace that supports the portal.

      For more information, see the *How to Add a User to a Group* topic in the *ibi™ WebFOCUS® Security and Administration* technical content.
3. Create a Portal Page and a CSS Theme file for each tenant workspace.
    - Create tenant-specific portal pages for each tenant group that requires them within each tenant workspace.
    - Create a file named *tenant_theme.css* that contains classes that define the unique theme for each tenant.
    - Enter the .bip-logo class in the tenant_theme.css file and identify the address of the tenant workspace logo file in the *background-image* property.
    - Save the tenant_theme.css file in the Hidden_Content folder of the tenant workspace.
4. Assign a logo file to each tenant workspace.
    - In the Hidden_Content folder, create a sub-folder entitled Images.

    - Create a logo file for each tenant and place it in the Hidden_Content/Images folder for each tenant workspace.

5. Create a centralized portal that includes a symbolic path for Tenant-Theme.css files.
    - Create the portal in a common workspace available to all.
    - Enter the IBFS Symbolic Path to the tenant-theme.css file using the ##{WF_PrimaryGroup} variable in the Custom Theme CSS field of the centralized portal.
    - Ensure that the tenant_theme.css file identifies the location of the logo file for that workstation.
    - Because you are using IBFS paths that point to the same location in each different workspace, ensure that you use the same location and file name for the logo and theme files in each tenant workspace.
6. Add Linked Tenant Portal Pages to the Centralized Portal.
    - Add any individual tenant pages to the centralized portal for those tenants that require them.
7. Publish Content.
    - Publish the centralized portal and the workspace that contains it.
    - Publish all individual tenant workspaces.
8. Test Portals.
    - Sign in as a user from each tenant group and run the portal.
    - Ensure that the logo, styling, and tenant-specific pages are appropriate.
    - Ensure that common pages are available and conform to tenant-specific styling.
9. Have an administrator or group administrator assign all remaining users to security groups.
    - Assign all users in each tenant group to the workspace for that tenant. Assign users to the security group whose range of privileges most closely matches their responsibilities.
    - Assign all users to the corresponding security group in the workspace that contains the portal.

For more information about assigning or mapping users to groups, see the *ibi™ WebFOCUS® Security and Administration* technical content.

Assigning Customized Logos to Tenant Workspaces

The symbolic path defined in the Custom Theme CSS field of the centralized portal redirects the call for a theme to a customized CSS theme file in the workspace of the user who issued the request to run the portal. In turn, the customized CSS theme file includes a property that identifies the logo to use for the tenant workspace.

This two-stage link enables users to overcome the limitation of the variable file path that can only call a single file, and ensures that the appropriate logo and theme are called for when users open the portal.

In order for this link to work successfully, each tenant workspace must contain its own tenant_theme.css file in the Hidden_Content folder, a subfolder within the Hidden_Content folder entitled Images, and its own logo image file within the Images subfolder.

Each CSS theme file must use the same name as the theme file identified in the Custom Theme CSS field of the centralized portal, "tenant_theme.css." You can use different names for logo image files, but you must ensure that the tenant_theme.css file for a workspace contains the correct name of the logo image file assigned to that workspace.

Create an Image Folder in Each Tenant Workspace

Procedure

1. Sign in to WebFOCUS as an administrator, and navigate to the Workspaces area.
2. In the Resources tree, expand the tenant workspace to which you want to add a customized CSS theme file.
3. Under your selected workspace, select **Hidden Content**.
4. In the content section, click the **+Content** button, point to**Other**, and then select

Folder to open the New Folder window.

5. Enter *Images* in the Title field, and select **OK.**
6. Right-click the new Images folder and select **Publish**.
7. Repeat steps 1 through 6 for each tenant workspace that access the centralized portal.

Upload a Logo File to a Tenant Workspace

Procedure

1. In the Workspaces area, in the Resources tree, expand the tenant workspace that contains the new copy of the logo file.
2. In the content section, click the **+Content** button, point to **Other**, and then select **Upload file** to locate the logo image file.
3. Navigate to the location of the logo file, select it, and then select **Open** to close the dialog and complete the upload.
4. Right-click the new image file and select **Publish.**
5. Repeat this procedure for each tenant workspace.

Creating Tenant-Specific Theme CSS Files

The tenant_theme.css file contains the .bip-logo class that identifies the address of the tenant workspace logo file in the *background-image* property. It also contains any additional customizations that alter the look and feel of the default portal frame and features.

To ensure that the symbolic IBFS Path in the main portal connects to the tenant_theme.css file for every tenant, you must save it in the Hidden_Content folder of each tenant workspace and include this folder in the full symbolic IBFS path. You must also use the same name for each tenant workspace theme file, tenant_theme.css.

You can use the Page Designer to create this file interactively as described in How to Configure Customized CSS Theme Files for Tenant Workspaces Using the CSS Editor. As an alternative, you can use the text editor to create a CSS file and enter the classes you wish

to add or modify. If you use this method, be sure to open the text editor from the Hidden_Content folder within the tenant workspace, and select the CSS format, and ensure that all entries conform to syntax requirements and include valid data.

Configure Customized CSS Theme Files for Tenant Workspaces Using the CSS Editor

Procedure

1. In the Workspaces area, in the Resources tree, expand the tenant workspace that requires a customized theme.
2. In the content section, click the **+Content** button, point to **Other**, and then select **Collaborative Portal** to launch the Portal Designer.
3. On the **Layout** tab, in the **Portal** group, click the **Theme button splitter**, then click **Launch CSS Editor** to open the Styling dialog.
4. On the toolbar, click the **Show the Element Inspector** button, and then click the **Inspect elements style information** button.

   Your cursor changes to a crosshair. You can also click the **Highlight inspected element** button to pinpoint the element that you want to style more easily.
5. Click a portal element that you want to style. In this example, click the top banner.

   The Classes field is automatically populated with the correct CSS class name for the selected element, in our example *bip-banner-top.*

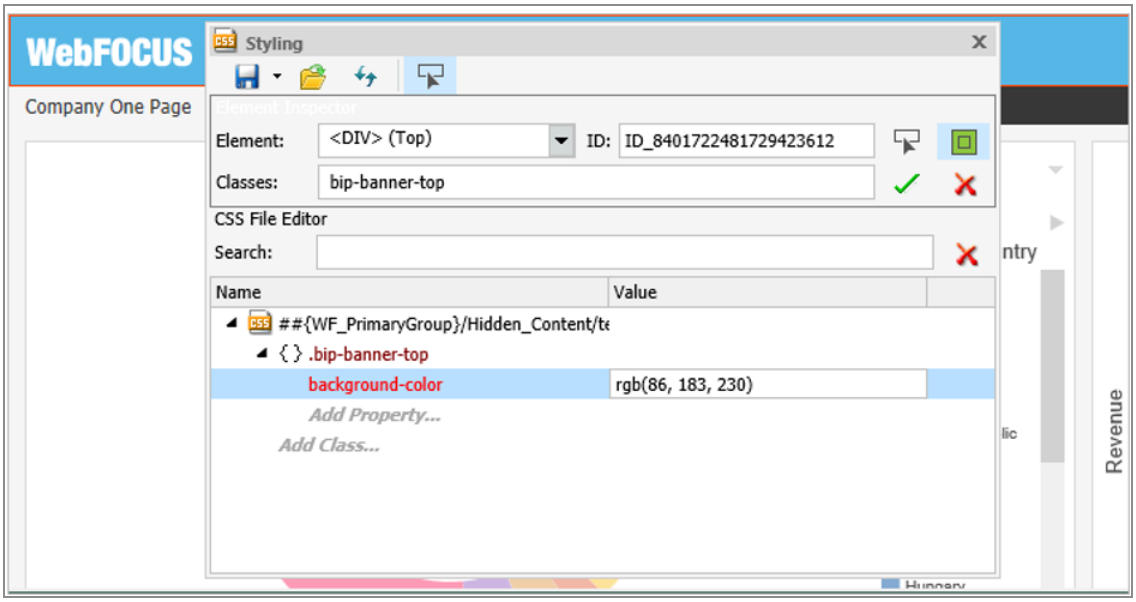
   > **Note:** You can also select elements from the Elements dropdown list, or, if you know the CSS class name of the element, you can type it in the Classes field. You can also use the Search field to search for a CSS class using keywords.
6. In the CSS File Editor, click the **Add Class** text, type the name of your selected CSS class, preceded by a dot, and then press **Enter**.

   In our example, type *.bip-banner-top*
7. Click the **Add property** text below the class and type the name of the property and the value to assign to it, separated by a colon (:). Type a semi-colon (;) at the end of

the statement, and then press the *Enter* key.

In our example, type background-color:#56b7e6;.

The banner instantly changes color to the specified hue, as shown in the following image.



Note: If you have entered an invalid CSS class or attribute, the browser rejects it and the change is not reflected in the portal appearance. Any hexadecimal color value that you enter is automatically converted into the equivalent RGB value.

8. Repeat steps 5 through 7 for each component of the portal theme that you must customize for this tenant group.
9. When your customizations are complete, add the .bip-logo class to the tenant_theme.css file as described in the following steps:
    a. In the CSS File Editor, click the **Add Class** text, type bip_logo, preceded by a dot, and then press the *Enter* key.
    b. Click the **Add property** text below the class name and enter: background-image:url("*Images/logofilename*")

       Where

logofilename

is the name of the image file that contains the logo.

c. Click the **Add property** text below the entry and add the following properties and their values:

background-position:center;

background-repeat:no repeat;

height:45 px;

width:150 px;

For example:

```
.bip-logo

{

background-image:url(“Image/CompanyOneLogo.png”);

background-position:center;

background-repeat:no repeat;

height:45 px;

width:150 px;

}
```

10. Click the **Save** button in the Styling dialog.

    If a custom CSS file is already applied to this portal, your changes are saved in that file. If the changes are new, the Save As dialog opens.

11. Navigate to the Hidden Content folder of the tenant workspace, name your new CSS file, tenant_theme.css and then click **Save**.

12. Close the Styling dialog.

13. Click **Save** to save the file as tenant_theme.css in the Hidden_Content folder, and close the Portal Designer.

14. Repeat this procedure for each tenant workspace.

Creating Tenant-Specific Portal Pages

If an individual tenant group needs one or more portal pages that are to be visible only to members of that group, create these pages within the tenant workspace and link to them from the main centralized portal. This limitation ensures that members outside of the tenant group will not see pages intended only for the tenant group.

Create a Tenant-Specific Portal Page

Procedure

1. On the WebFOCUS Hub, navigate to the Workspaces area.
2. In the Resources tree, expand the tenant workspace to which you want to add a new portal page.
3. In the content section, click the +Content menu, point to **Other**, and then select **Portal Page** to open the Page Designer and the Add Page dialog.
4. Select a template, and then click **Create** to open the portal page in the Page Designer.
5. Optionally, add content to the portal page.
6. Select the same page template as that which is used for the main portal.
7. Type the name of the workspace in the *Title* field and accept the automatically-generated counterpart in the Name field.
8. On the ribbon, in the Preview group, select **Themes**, and select **Configure CSS Files**.
9. Select **Browse** next to the Custom Theme CSS field.
10. In the Open – IBFS:/WFC … dialog, navigate to the Hidden_Content folder for this workspace and select tenant_theme.css.
11. Select **Open** to close the dialog and assign the customized tenant theme to the tenant-specific portal page.
12. Click **OK** to close the Portal Theme Files dialog.
13. Save and close the Page Designer.

    The new stand-alone portal page displays in the workspace. You can now copy,

move, and link this portal page to portals.

14. Right-click the new page and select **Publish**.
15. Repeat this procedure for every tenant workspace that uses tenant-specific portal pages.

Creating a Centralized Portal for Common Use

The centralized portal contains all of the links to data sources and content that is available to tenant users. Content pages, based on a portal template that uses a symbolic reference to tenant_theme.css files, make information available to all users in the appropriate format.

Enter the IBFS Symbolic Path to the variable style sheet file in the Custom Theme CSS field of the centralized portal. Because you are using an IBFS path that points to the same location in each different workspace, ensure that you use the same location for the logo and theme files in each tenant workspace.

Create a Centralized Portal With a Symbolic Reference to Tenant Theme Files

Procedure

1. On the WebFOCUS Hub, navigate to the Workspaces view.
2. In the Resources tree, expand the workspace for the centralized portal.
3. In the +Content menu, point to **Other**, and then select **Collaborative Portal** to open the New Portal dialog.
4. Type a descriptive title for the portal in the Title field.

   As you type, WebFOCUS automatically assigns the value you type in the Title field, adjusted to conform to IBFS rules, to the Name field. You can edit or replace this value with a custom name if required.

   WebFOCUS also automatically assigns the appropriate IBFS Path to the portal, based on the location of the workspace and the title you enter, to the Path field, and an

external version of the path that does not begin with the IBFS parameter in the URL field.

5. Enter a short name to reference your portal in the Alias field.
6. Select **Create** to store these values and create the portal.
7. On the ribbon, in the Themes group, select Theme and enter the following path to the location of the theme file in the Custom Theme CSS field:

```
IBFS:/WFC/Repository/##{WF_PrimaryGroup}/Hidden_Content/tenant_
theme.css
```

Where:

IBFS:/WFC/Repository

Is the opening path that identifies the IBFS system, the WebFOCUS Content subsystem, and the Repository where all content folders are located within the IBFS system.

##{WF_PrimaryGroup}

Is the variable that redirects the path to the primary tenant workspace group to which the user working with the portal belongs.

Hidden_Content/tenant_theme.css

Is the remaining path within each tenant workspace to the file containing the theme for members of that tenant group.

Note: You can confirm the validity of the path you use in this field by reviewing the path assigned to the tenant workspace folders in the Properties panel.

8. Select remaining options, and add pages and other resources as described in *Business Intelligence Portal* technical content.
9. When your configuration is complete, save your changes and close the Portal Designer window.

Adding Tenant-Specific Portal Pages to the Centralized Portal

To include tenant-specific portal pages in the centralized portal, you must add them as linked pages to the centralized portal.

Create Additional Linked Portal Pages

Procedure

1. Right-click the collaborative portal in the centralized portal workspace and select **Edit** to open Page Designer.
2. Link to an existing portal page as described in the following steps:
   a. Click the **Add Page** icon to open the Add Page dialog.
   b. Select the **Link To Existing Page** option, as shown in the following image.

   c. In the Open dialog, select the tenant portal page from the tenant-workspace and select **Open**.

      The new linked portal page displays in the portal.
3. Repeat step 2 for each tenant-specific portal page.
4. When you have added all of the pages linked to tenant workspace portal pages, save and close the portal.

Publishing Content

When the portal is ready and all tenant workspaces and tenant workspace groups are prepared, you must make the portal and related workspaces available by changing them to Published status to make the portal and its contents available to all users with their appropriate level of access.

Publish a Portal

Procedure

1. On the WebFOCUS Hub, navigate to the Workspaces area.
2. In the Resources tree, expand the workspace for the centralized portal.
3. Right-click the portal in the content section of the WebFOCUS Home Page and select **Publish** from the shortcut menu.

Testing the Portal User Experience

Before you can announce availability of the portal for general use, you must first ensure that the appropriate theme and logo are assigned to the portal for users from each tenant group.

Test the Portal User Experience

For each tenant group:

Procedure

1. Sign in as a test user from each tenant group and run the portal.
2. Ensure that the logo, styling, and tenant-specific pages are appropriate.
3. Ensure that common pages are available and conform to tenant-specific styling.
4. If you encounter unexpected results, review the portal and tenant workspace

configurations to ensure that your configuration conforms to the shared portal design.

Scheduling and Distributing Content

Learn how you can use schedules to distribute content to multiple recipients, create a distribution list to issue content to multiple recipients, create event-based schedules using alerts, and share your content right from the WebFOCUS Hub or Home Page.

Creating Event-based Schedules

In the business climate today, cutting costs and increasing profitability are critical. Organizations create and distribute reports for evaluating and taking action when management-defined conditions are not met. The evaluation can largely be automated using Alert reporting.

Alert reporting automates the evaluation of a defined condition to determine whether or not a report should be submitted. Recipients of the report know before they open it that they are receiving this report because there is an exception in their area of responsibility. This topic introduces and describes how you can create Alerts in WebFOCUS.

Alert Reporting

A data-driven Alert is an event that is prompted by a guideline that you define. This guideline can vary from the simple to the complex. For example, a simple guideline is to alert a sales manager when an order that exceeds $1 million is entered. An example of a more complex guideline is to alert a department manager when cumulative expenses exceed budget for any category. The report sent to the manager as a result of the Alert might show the most recent transactions, the amounts, and the sources.

Alert reporting is an integrated feature of WebFOCUS Managed Reporting and ReportCaster. An Alert report can be run interactively or by authorized users. You can use ReportCaster to schedule and distribute an Alert report. Burst capability can send targeted information to the people who need it, so that there is less information for each person to analyze.

Alerts work with all email clients. They are supported on the following mobile devices: iPhone®, iPad®, and email enabled mobile phones. Alerts can also be sent to any PC or laptop computer with email capability.

Alerts provide the following:

- **Alert tools.** Using Alert Assist, you can quickly set up test conditions (rules) that determine if an Alert condition should be triggered (true). This is called the Alert test. When the Alert test is triggered (true), the Alert result is run. An Alert result can be an existing report procedure or you can create the Alert result using WebFOCUS InfoAssist.
- **Scheduling flexibility.** Optionally, you can schedule an Alert to run as often as every minute to evaluate the Alert test conditions.

Components of an Alert

The Alert feature requires the following components:

- **WebFOCUS Reporting Server.** This server is responsible for processing the procedure, accessing and retrieving the requested data, and creating the report when the Alert test is triggered (true).
- **Managed Reporting.** This environment is used to create and manage Alerts in the WebFOCUS repository.

An Alert consists of the following:

- Alert test
- Alert result

An Alert test is required to check whether or not a set of defined test conditions (rules) is met (true or false). An Alert test can be a *WebFOCUS Test*, which is a simple TABLE request that you create to define the condition to test for. Alternatively, an Alert test can be a *Test for File Existence*, which checks for the existence of a file that is accessible to the WebFOCUS Reporting Server to which the Alert test is submitted. The file does not need to be in the APP PATH. It just needs to be in a location where it can be found by the WebFOCUS Server.

The *Test for File Existence* file does not need to be an actual file with an extension. Testing for the existence of a folder is also valid.

If the Alert test is triggered (true), returns records, the Alert result request is processed. You have the option of creating the result report or selecting an existing report stored in the WebFOCUS repository that you are authorized to run.

Alerts Created in the Browser

The browser tab uses the generic name Alert*n*, where *n* is an index number starting at 1. All subsequent Alerts increase by 1. If you save the Alert, the dialog is automatically set up with this generic name. However, you can change the name as desired.

If you select **WebFOCUS Test** in the browser, you are prompted to create the Alert test using WebFOCUS InfoAssist. The version of WebFOCUS InfoAssist that is invoked does not have field styling, heading, footing, or report options, such as OLAP and On-Demand Paging. The Alert test determines whether or not a specified condition is true. It is not the report that is displayed as the result of the Alert.

You can create the Alert result using WebFOCUS InfoAssist, this time with all the available styling and report options. Alternatively, you can select an existing report stored in the WebFOCUS repository that you are authorized to run.

Note: It is recommended that you select an existing report for the Alert result request, as it is available to edit, run interactively, or schedule independently of the Alert. If you create the Alert result using WebFOCUS InfoAssist within Alert Assist, you need to use Alert Assist and select the open option again to edit the request, because the Alert test and the report to be run are contained within the Alert procedure.

Alert Assist Sample Code Created With WebFOCUS InfoAssist

In the sample code that follows, both the Alert test and the report to be run (Alert result) are created with WebFOCUS InfoAssist. To keep the sample code simple, styling and report options, such as report headings and conditional styling, are not included in this request.

Notice that after the first TABLE request, there is a –IF statement that checks if the number of lines in the Alert test is equal to zero (-IF &LINES EQ 0). This test condition determines if the second TABLE request, to run the report, should be triggered (true).

If the number of lines is greater than zero, then there are records that satisfy the Alert test, and the report is run. If the number of lines is equal to zero, then there are no records that satisfy the Alert test, and the report is not run.

```
-* Created by Alert Assist

```

```
-* start of the test report

ENGINE INT CACHE SET ON

-DEFAULTH &WF_SUMMARY='Summary';

-DEFAULTH &WF_TITLE='WebFOCUS Report';

TABLE FILE ibisamp/wf_retail

SUM WF_RETAIL.WF_RETAIL_SALES.COGS_US

WF_RETAIL.WF_RETAIL_SALES.REVENUE_US

BY WF_RETAIL.WF_RETAIL_PRODUCT.PRODUCT_CATEGORY

BY WF_RETAIL.WF_RETAIL_PRODUCT.BRAND

WHERE WF_RETAIL.WF_RETAIL_SALES.COGS_US GT WF_RETAIL.WF_RETAIL_
SALES.REVENUE_US;

ON TABLE HOLD

ON TABLE NOTOTAL

ON TABLE SET PAGE-NUM NOLEAD

ON TABLE SET SQUEEZE ON

ON TABLE SET EMPTYREPORT ON

ON TABLE SET HTMLCSS ON

ON TABLE SET HTMLENCODE ON

ON TABLE SET CACHELINES 100

END

-* end of the test report
```

```
-* start of the test

-RUN

-IF &LINES EQ 0 GOTO ALERTEXIT;
```

```
-* end of the test

-* start of the output report

ENGINE INT CACHE SET ON

-*COMPONENT=Define_wf_retail

DEFINE FILE ibisamp/wf_retail

Loss/D12.2=WF_RETAIL.WF_RETAIL_SALES.REVENUE_US - WF_RETAIL.WF_RETAIL_
SALES.COGS_US ;

END

-DEFAULTH &WF_SUMMARY='Summary';

-DEFAULTH &WF_TITLE='WebFOCUS Report';

TABLE FILE ibisamp/wf_retail

SUM WF_RETAIL.WF_RETAIL_SALES.QUANTITY_SOLD

Loss

BY WF_RETAIL.WF_RETAIL_PRODUCT.BRAND

ACROSS WF_RETAIL.WF_RETAIL_TIME_SALES.TIME_QTR

WHERE WF_RETAIL.WF_RETAIL_SALES.COGS_US GT WF_RETAIL.WF_RETAIL_
SALES.REVENUE_US;

ON TABLE SUBHEAD

"Brand Revenue Loss"

ON TABLE PCHOLD FORMAT HTML

ON TABLE NOTOTAL

ON TABLE SET CACHELINES 100

ON TABLE SET PAGE-NUM NOLEAD

ON TABLE SET SQUEEZE ON
```

```
ON TABLE SET HTMLCSS ON

ON TABLE SET HTMLENCODE ON

ON TABLE SET EMPTYREPORT ON

ON TABLE SET GRWIDTH 1

ON TABLE SET STYLE *

INCLUDE=IBFS:/FILE/IBI_HTML_DIR/javaassist/intl/EN/ENIADefault_
combine.sty,$

TYPE=REPORT, TITLETEXT=&WF_TITLE.QUOTEDSTRING, SUMMARY=&WF_
SUMMARY.QUOTEDSTRING, HFREEZE=OFF, $

TYPE=TABHEADING, LINE=1, JUSTIFY=CENTER, $

TYPE=TABHEADING, LINE=1, ITEM=1, OBJECT=TEXT, SIZE=14,
STYLE=BOLD+ITALIC, $

ENDSTYLE

END

-* end of the output report
```

```
-* start of the options

-* end of the options

-ALERTEXIT

-* Finished by Alert Assist
```

Open WebFOCUS Alert Assist

Procedure

1. Sign in to WebFOCUS as an administrator or developer.

2. If you are working with the Hub or the WebFOCUS Home Page, open WebFOCUS Alert Assist in one of the following ways:

   - From the WebFOCUS Hub, select the Workspaces area. Select the workspace in which you want to create the alert, and in the +Content menu, point to **Other**, and click **Alert**.
   - From the WebFOCUS Home Page, select the Workspaces area. Select the workspace in which you want to create the alert. If the +Content menu is visible, point to **Other**, and click **Alert**. If the Action bar is visible, click **Alert**.
   - From the Legacy Home Page, in the Resources tree, right-click the workspace or folder where you want the alert to reside, point to **New**, and then click **Alert**.

   WebFOCUS Alert Assist opens.

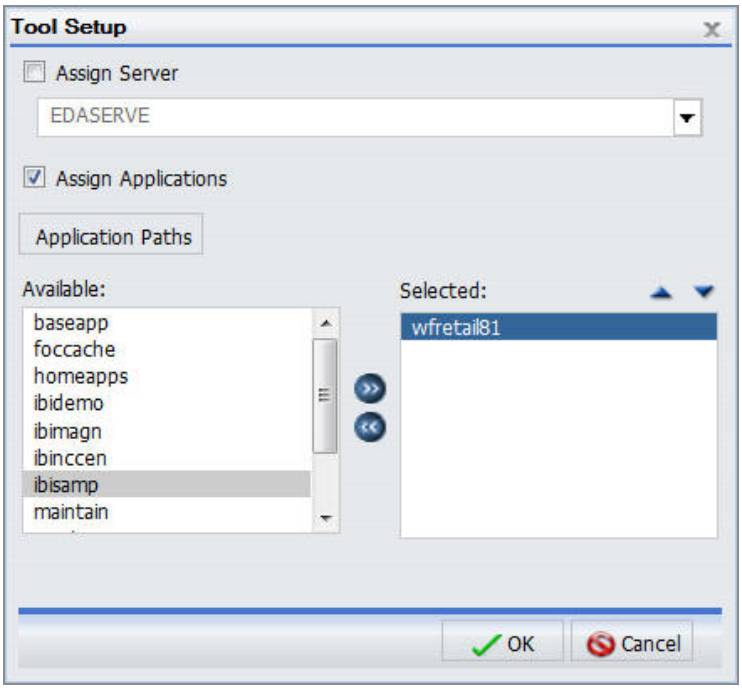
3. If you are working with the Legacy Home page, open WebFOCUS Alert Assist by performing the following steps:

   - In the Resources tree, right-click the workspace or folder where you want the alert to reside, point to **New**, and then click **Alert**.

     The Tool Setup dialog opens. It provides options for selecting a WebFOCUS Reporting Server and Application Paths.

     > **Note:** User access to the Tool Setup dialog to specify WebFOCUS Reporting Server properties is controlled by a WebFOCUS security privilege. For information on WebFOCUS security privileges, see the *ibi™ WebFOCUS®® Security and Administration* manual.

   - Select a WebFOCUS Reporting Server and Application Paths when not using the default WebFOCUS Reporting Server specified in the WebFOCUS Client configuration or the default application path for that WebFOCUS Reporting Server, as shown in the following image.



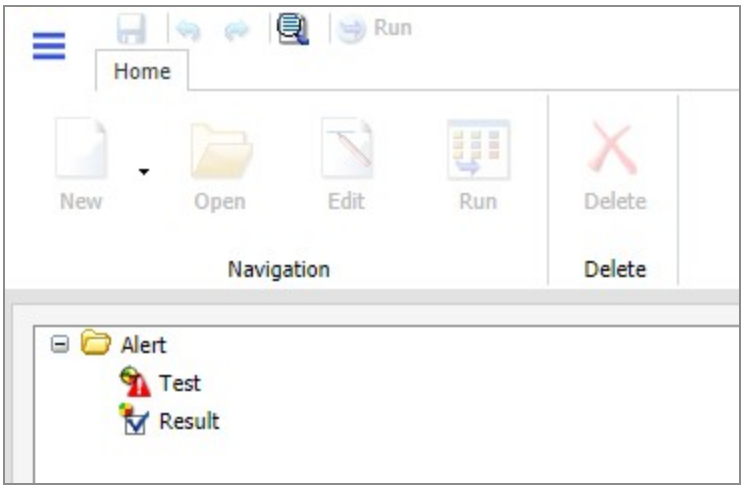
> **Note:** The Tool Setup dialog is only available on the Legacy Home Page. On the WebFOCUS Home Page, you must set a WebFOCUS Reporting Server and Application Paths on the folder level in the Properties prior to creating content.

- Click **OK**.

  WebFOCUS Alert Assist opens.

Alert Assist Overview

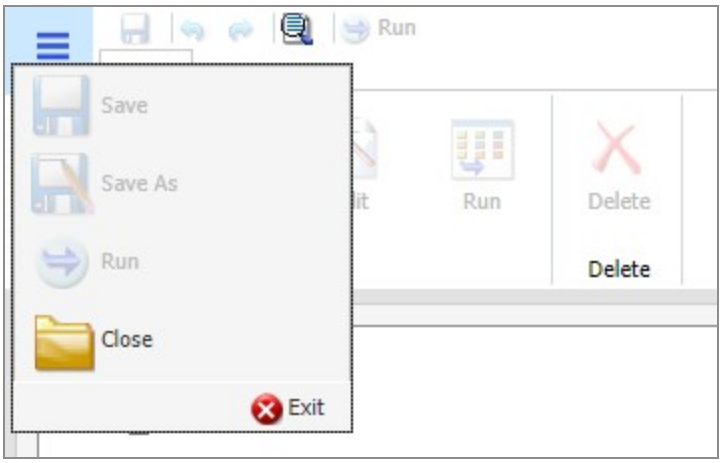
When you create an Alert in the web browser, it invokes Alert Assist and then WebFOCUS InfoAssist. Alert Assist has a user interface similar to WebFOCUS InfoAssist. The following image shows the WebFOCUS Alert Assist interface.



Alert Assist Main Menu

In the upper-left corner of the browser window is the Main menu button, which provides access to the Alert Assist Main Menu. This menu contains the Save, Save As, Run, Close, and Exit options. Some of these options are also on the Alert Assist Quick Access toolbar.

The following image shows the expanded Alert Assist Main Menu.



Save

Saves the Alert. This option is disabled until both parts of the Alert are created.

Save As

Saves the current Alert with a new name. The Save As dialog displays a field where you can type the new name. This option is disabled until both parts of the Alert are created.

Run

Submits the Alert procedure to the WebFOCUS Reporting Server. This option is active when both parts of the Alert have been created. The output always opens in a new browser.

Close

Closes the current Alert and prompts you to save any changes.

Exit

Exits the Alert Assist and prompts you to save any pending changes to the open Alert.

Alert Assist Quick open Toolbar

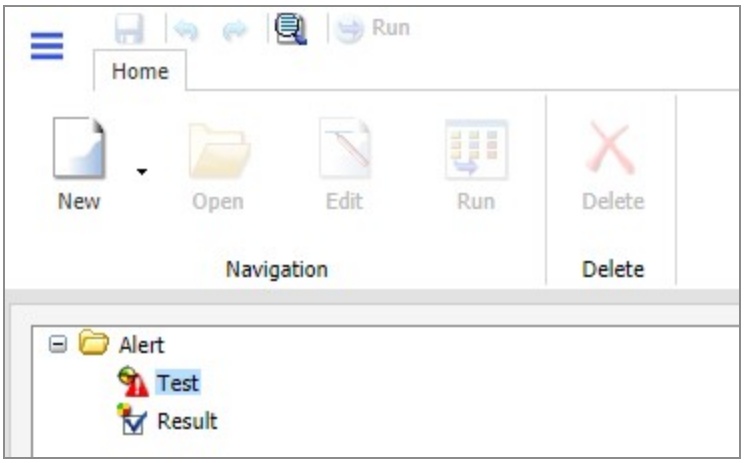
The Alert Assist Quick open toolbar contains the following buttons.

Button	Description
	Saves the Alert. This option is disabled until both parts of the Alert are created.
	Reverts back by undoing one action.
	Moves forward by redoing one action.
	Displays the Alert procedure code in a read-only window.
	Submits the entire Alert procedure to the WebFOCUS Reporting Server. This option is active when both parts of the Alert have been created. The output always opens in a new browser.

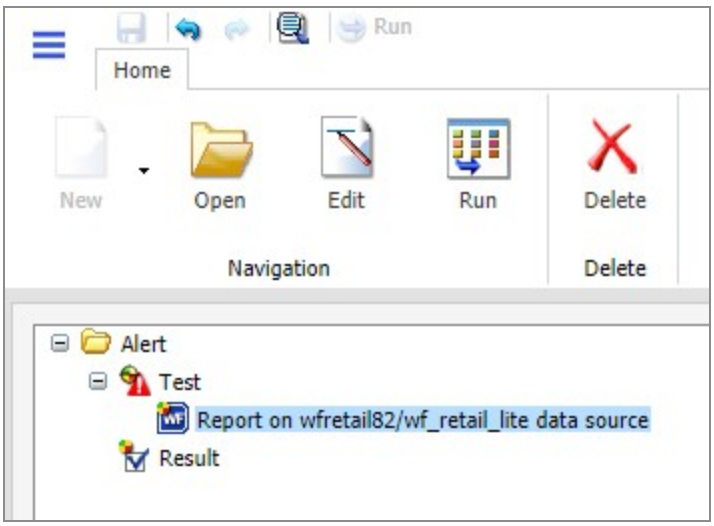
Ribbon

Under the Alert Assist Quick Access toolbar is a ribbon. When Alert Assist first opens, none of the ribbon options are activated.

You must select the Test node or Result node to activate the New option, as shown in the following image.



You must create a Test to activate the remaining options, as shown in the following image.



The ribbon contains the following options:

Navigation Group

New

Displays a menu from which you can choose to create a new WebFOCUS report or WebFOCUS test, open an existing report, or test for file existence. This button is active when the Test node or Result node is selected. You can also find these options in the shortcut menus for the Test node and Result node.

Open

Invokes WebFOCUS InfoAssist so that you can make changes to the report when an Alert test or Alert result is selected. The Open option is only activated after a report test is created.

Edit

Opens the report on FILENAME data source dialog when an Alert test or Alert result is selected. You can then edit the report in a text editor.

Run

Runs the report in a new browser window when an Alert test or Alert result is selected.

Delete Group

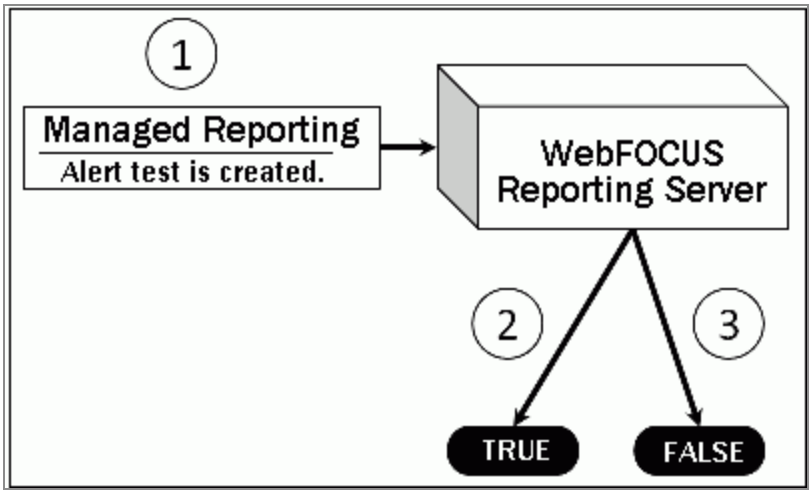
Delete

Removes the report from the Test or Result node.

The Life of an Alert

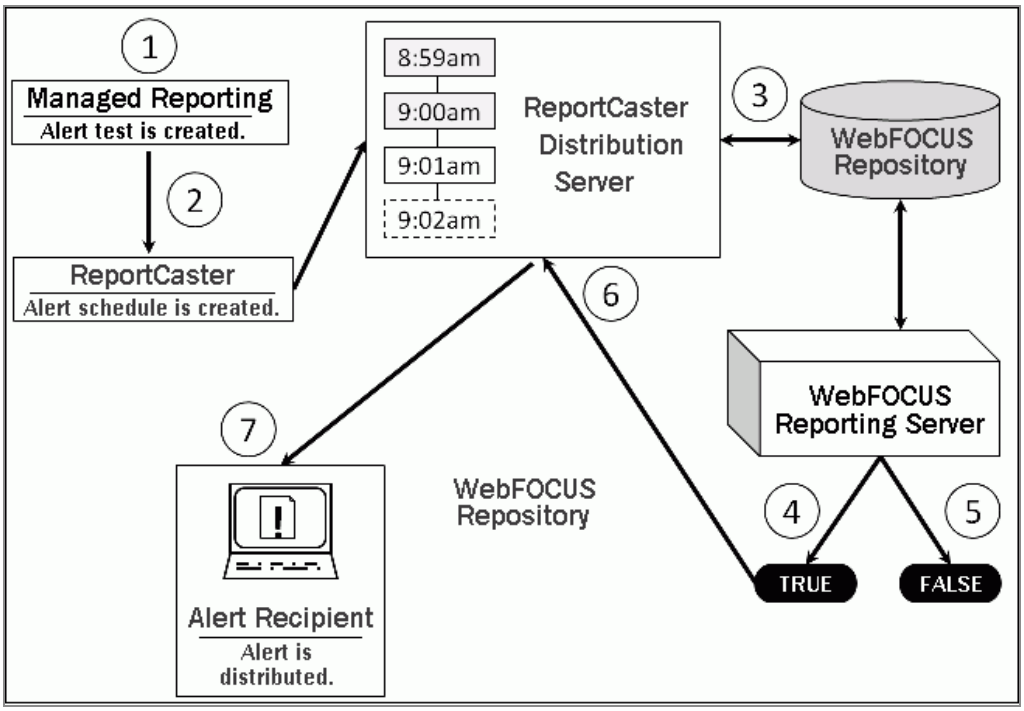
Authorized users can run an Alert test interactively and optionally schedule it to be distributed by ReportCaster.

The following image shows basic Alert processing.



1. The developer, using Alert Assist or the Alert Wizard, creates an Alert test and designs the report that is run if the Alert condition is true.
2. If the Alert test is true, the WebFOCUS Reporting Server runs the Alert result.
3. If the Alert test is false, the Alert result is not run.

The following image shows scheduled Alert processing.



1. The developer, using Alert Assist or the Alert Wizard, creates an Alert test and designs the report that is run if the Alert condition is true.
2. If desired, an Alert schedule is created using ReportCaster.
3. The ReportCaster Distribution Server checks for scheduled jobs in the WebFOCUS Repository.
4. When the ReportCaster Distribution Server processes a scheduled Alert procedure, it is submitted to the WebFOCUS Reporting Server to evaluate if the Alert test is true.
    a. If the Alert test is false, the Alert is returned to the queue for the next scheduled time.
    b. If the Alert test is true, the WebFOCUS Reporting Server runs the Alert result and returns the results to the ReportCaster Distribution Server. The ReportCaster Distribution Server distributes the Alert result to the recipients, as specified in the schedule.

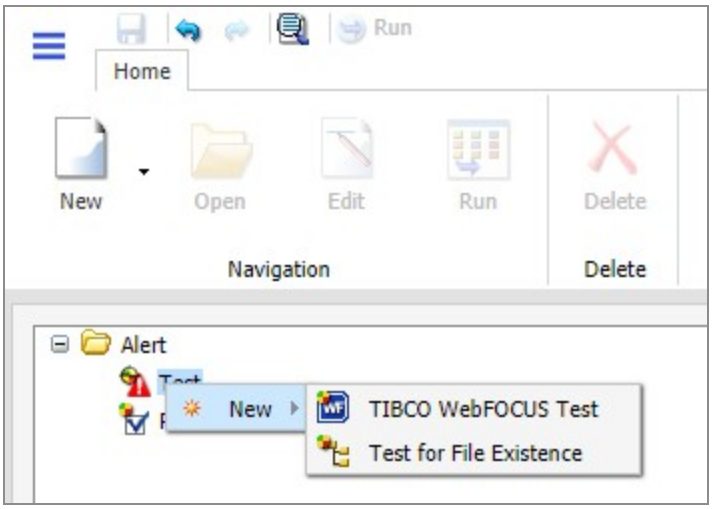
Creating and Scheduling an Alert

The following procedures describe how to create an Alert test, and Alert result using Alert Assist, and how to schedule an Alert with ReportCaster.

Create an Alert Test

Procedure

1. In the Alert Assist main window, right-click the **Test** node, and then point to **New**, as shown in the following image.



2. Select one of the following options:

   - **WebFOCUS Test.** Allows you to create a new report in a scaled-down version of WebFOCUS InfoAssist. Proceed to step 3.
   - **Test for File Existence.** Allows you to select an existing report. Proceed to step 6.

   Note: The scaled-down version of WebFOCUS InfoAssist is used to create basic TABLE requests with HOLD (not PCHOLD FORMAT) statements. It generates procedure syntax that is written to the Alert the same way as in earlier WebFOCUS releases. The Edit option on the ribbon allows you to open the editor and manually enter the procedure code or edit existing procedure code. When the test is saved from the editor, the syntax needs to be validated as having an ON TABLE HOLD statement, a prerequisite for an Alert test.

3. When you select **WebFOCUS Test**, WebFOCUS InfoAssist opens. Select a Master File from the Open dialog.
4. Create your report as desired, and then save it.

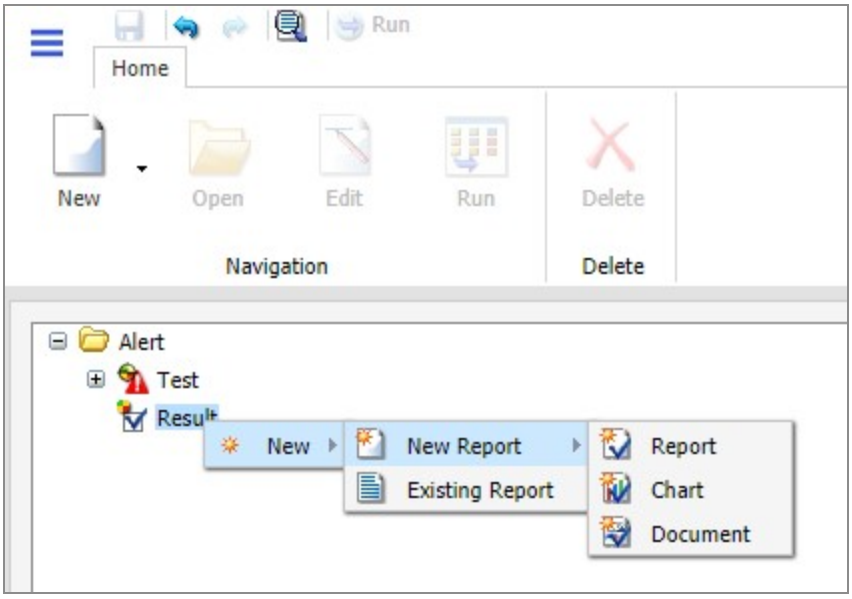
5. Close WebFOCUS InfoAssist to return to Alert Assist.
6. When you select **Test for File Existence**, type the full path to the file accessible to the WebFOCUS Reporting Server that you want to check exists. Do not use a file name or folder path that includes spaces.

   Testing a folder for existence is also valid. Type the full path to the folder accessible to the WebFOCUS Reporting Server. If the file is located, the Alert is triggered (true) and the Alert result report is run.
7. Click **OK** to save the Alert test.

Create an Alert Result

Procedure

1. In the Alert Assist main window, right-click the **Result** node and point to **New**, as shown in the following image.



2. Select one of the following options:

   - **New Report.** Allows you to create a new report, chart, document, or dashboard, using the full version of WebFOCUS InfoAssist. Proceed to step 3.
   - **Existing Report.** Allows you to choose from the existing reports in the tree. Proceed to step 5.

3. If you select **New Report**, the Open dialog opens. Select a Master File.

   WebFOCUS InfoAssist opens, and you can create the report that is run when the Alert test is triggered (true).

4. Save your report, and close the WebFOCUS InfoAssist window to return to Alert Assist. Proceed to step 9.

5. If you select **Existing Report**, the Open dialog opens. Select a report you are authorized to run from the tree.

6. Click **Open**.

   The Open dialog closes and the selected report appears under the Result node.

7. Select **Save** from the Alert Assist menu. The Save As dialog opens.

8. Type the Alert Title, and click **OK**.

9. Close Alert Assist.

   The Alert result is automatically run if the Alert test report is triggered (true). If you are authorized to schedule reports for distribution, you can optionally schedule the Alert.

   Note: As you use Alert Assist to create reports, you may see messages that state Report Saved. Your changes to the report have been saved, but they are not written to the WebFOCUS Repository until the Alert is saved. If you exit Alert Assist before you click **Save** in the Alert Assist menu, the Alert is not saved.

Schedule an Alert

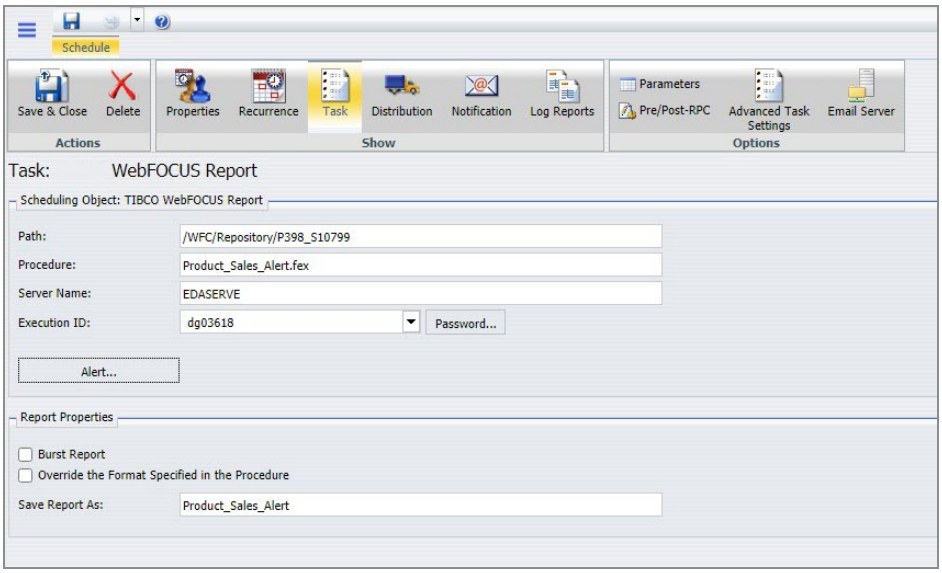
Procedure

1. Access the scheduling tool in one of the following ways:

   - From the WebFOCUS Hub, select the Workspaces area. Right-click the alert that you created, point to **Schedule**, and select a distribution method.
   - From the WebFOCUS Home page, right-click the alert, point to **Schedule**, and click the distribution method for your alert schedule. You can also click the Schedule category in the Action Bar, and then click **Schedule**.

- From the Legacy Home Page, in the Resources tree, click the domain or folder where the Alert resides. In the WebFOCUS Explorer, click the Alert and then click **Schedule**. Select how the Alert report is distributed when the Alert test is triggered (true).

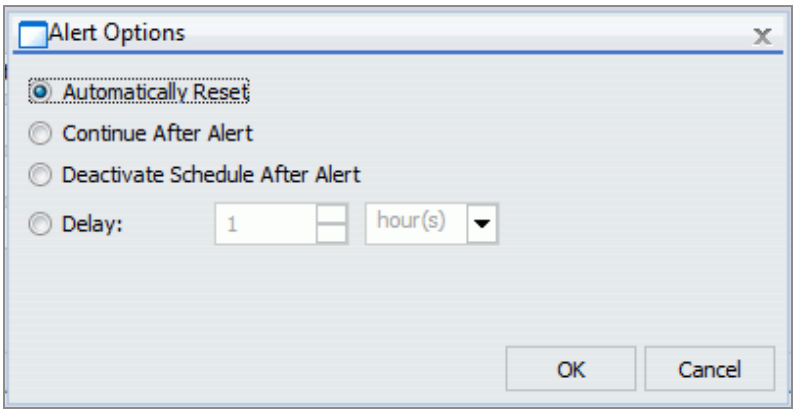
The ReportCaster Basic Scheduling tool opens in a new browser window, as shown in the following image.



For more information on the Basic Scheduling tool and distribution options, see the *ibi™ WebFOCUS®® ReportCaster Guide*.

2. Click **Alert**.

   The Alert Options dialog opens, as shown in the following image.



3. Select one of the following Alert Options:

- **Automatically Reset.** This option continues to run the schedule at the specified time and checks to confirm that the Alert test is no longer true before the Alert test is evaluated again. It is best to use this option when you do not want to receive the Alert result again until after the exception condition has been addressed and occurs again. For example, when the quantity in inventory is greater than 20,000, the Alert is triggered. You do not want to receive the report again until after the inventory is less than or equal to 20,000 for all products and then goes back over 20,000 again.
- **Continue After Alert.** This option continues to run the schedule at the specified time and distribute the report each time that the Alert test is true. It is best to use this option when you want to be notified at the interval specified in the schedule that the Alert test is true.
- **Deactivate Schedule After Alert.** This option deactivates the schedule after the Alert is triggered. The schedule has to be activated again for the Alert test to run after the Alert is triggered. It is best to use this option for one-time Alert tests. This is the default value.
- **Delay.** This option is best used when you want to allow a specific period of time to address the Alert test but want to be notified again if the Alert test has not been met. You can restart the Alert after a maximum of 99 hours, days, weeks, months, or years. For more information, see the *ibi™ WebFOCUS®® ReportCaster Guide* technical content.

As you complete the creation of the schedule, remember to consider the burst option to distribute specific report values, instead of the entire report. When a report is burst, the distribution information must be provided in a distribution list, distribution file, or dynamic list for email distribution and an access list for library distribution. The email and library distribution options are the most effective for Alert reports because of the push versus pull notification through email. For more information on using the burst option in ReportCaster, see the *ibi™ WebFOCUS®® ReportCaster Guide*.

4. Select the **Properties** tab and type a title and summary for the scheduled report.
5. Click **Recurrence** and specify when and how often to run the schedule.

   For more information on Recurrence options, see the *ibi™ WebFOCUS®® ReportCaster Guide*.
6. Click **Distribution** and specify the destination information for where you want the report to be distributed. For more information on specifying schedule distribution

information, see the *ibi™ WebFOCUS®® ReportCaster Guide*.

7. If you wish to receive notifications of the Alert distribution, click **Notification** and specify the destination information for where you want the notification to be sent.
8. If your Alert uses parameters, check **Parameters** to review and specify parameter values. Ensure that you have the correct Path, Procedure, and Server Name. For more information on specifying parameter values when scheduling a report procedure (FEX), see the *ibi™ WebFOCUS®® ReportCaster Guide*.
9. Click **Save** and close the ReportCaster Basic Scheduling tool.

   The schedule report now appears in the repository, and you can access it from the Hub or Home Page.

Checking Scheduled Alerts

When an Alert test is false (and therefore not activated), the Alert result report is not run. When an Alert schedule runs, information about the Alert test evaluation (true or false) and any error or warning messages that occur during schedule or Alert processing are written to the log file.

To track the completion of a scheduled Alert, or errors that occurred during processing without checking the log report for the Alert schedule, we recommend that you use the Schedule Notification option.

In the Scheduling tool, the Notification tab allows you to specify:

- The terms for supplying notification (Never, which is the default value, Always, or On Error).
- The level of detail in the notification (full notification or brief notification).
- The email addresses to distribute the notification information to.

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